Index to Contents, December 1943

(The Annual Index to Contents appears at the back of this issue.)

Airports and Aviation
Post-War Planning, Small Communities . . . 51
Air Traffic and Urban Planning—II . . . 75

Business and Industrial Development
United States Patent System . . . 113

Business Machines and Systems
Correct Lubrication . . . 7
Property Owners Become Assessors . . . 7
Three Clerks, One Calculating Machine . . . 49
Block the Breakdowns . . . 60

Cartoons
No Blackout in British Humor . . . 105

Census
Census Facts Concerning Negroes . . . 52

City Manager Plan
City Manager Appointments . . . 101

Conferences and Conventions
Conventions—Where and When . . . 101

Education
Institute of Local and State Governments . . . 59
Art Aids Civics, Detroit Schools . . . 65

Finance and Taxation
Inequitable Real Estate Assessments . . . 5
Property Owners Become Assessors . . . 7
Financing Post-War Projects . . . 47
Property Taxes and Municipal Economics . . . 62
To Debunk False Land "Values" . . . 63
Municipal Finances in Order . . . 99
Municipal Bond Market . . . 101

Fire Prevention and Control
Villages Like Good Water, Too . . . 83

Government and Administration
Institute of Local and State Governments . . . 59
Three-Way Cooperation Urged . . . 73
Chamber of Commerce and City Government . . . 105

Housing
Replanning an Obsolete Square Mile . . . 46
Post-War Plans, New York City . . . 53
Factory-Built Houses . . . 64
Churchill Urges Planning and Housing . . . 67

Insurance, Municipal
Service That Wears . . . 7

Laws and Legal Decisions
Municipal Law Notes and Decisions . . . 103

Libraries
Public Libraries as War Memorials . . . 79

Lighting, Outdoor
Purchase of Electric Service Co. Vetoed . . . 41
Electronics and Municipal Field . . . 41
Power Companies and Street Lighting . . . 95
Five Voices for Street Lighting . . . 97

Manpower
Enlist Public Aid in Snow Removal . . . 7
Manpower Problems . . . 9

Memorials
Comment from a Training Camp . . . 47
Public Libraries as War Memorials . . . 79

Motor Equipment
Maintenance Rules for Diesel Engines . . . 121

Officials and Employees
Three Clerks, One Calculating Machine . . . 49

Parks and Recreation
Replanning an Obsolete Square Mile . . . 46
Post-War Plans, Small Communities . . . 51
Post-War Plans, New York City . . . 53

Planning and Zoning
Federal Aid for Street Projects . . . 5
High Lights from a $100,000 Report . . . 37
Replanning an Obsolete Square Mile . . . 46
Comment from a Training Camp . . . 47
To Debunk False Land "Values" . . . 63
Factory-Built Houses . . . 64
Small City Presents Master Plan . . . 73
Three-Way Cooperation Urged . . . 73
"Horse Sense Planning" . . . 79
Zoning and Planinng Notes . . . 99

Police
F. M. Radio, Greater Range, Less Power . . . 15
Film on Juvenile Delinquency . . . 105

Population
Census Facts About Negroes . . . 52

Post-War Planning
Blasting Barriers to Post-War Planning . . . 11
High Lights from a $100,000 Report . . . 37
Editorial Comment . . . 39
Electronics and Municipal Field . . . 41
Hindsight vs. Foresight . . . 42

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Salt Lake City Looks Ahead . . . 45
Financing Post-War Projects . . . 47
Elimination of Mississippi Mud . . . 50
Post-War Plans, Small Communities . . . 51
Introduction to a Planning Report . . . 52
Post-War Plans, New York City . . . 53
Local Government Is News . . . 66
Churchill Urges Planning and Housing . . . 67
Air Traffic and Urban Planning—II . . . 75
Cities Must Deal with Transit . . . 93
Power Companies and Street Lighting . . . 95
Chamber of Commerce and City Government . . . 105

Public Relations
Turn Brickbats into Bouquets . . . 40
Local Government Is News . . . 66

Public Works
Turn Brickbats into Bouquets . . . 40
Snow Removal by Contract . . . 48
Post-War Plans, New York City . . . 53
Three-Way Cooperation Urged . . . 73

Quotable Thoughts
For Your Talks and Reports . . . 68

Radio
F. M. Radio, Greater Range, Less Power . . . 15

Real Estate
Inequitable Real Estate Assessments . . . 5

Rural-Urban Cooperation
Rural-Urban Coordinating Council . . . 74

Safety
F. M. Radio, Greater Range, Less Power . . . 15
Keep Signs Away from Poles . . . 15
Five Voices for Street Lighting . . . 97

Schools
Service That Wears . . . 7
Census Facts Concerning Negroes . . . 52
Art Aids Civics in Detroit Schools . . . 65

Sewerage and Sewage Treatment
Better Specifications, Better Products . . . 7
Blasting Barriers to Post-War Planning . . . 11
A Correction . . . 11
Clay Sewer Pipe . . . 11
Electronics and Municipal Field . . . 41
Can Sewage Pumps Be Trusted? . . . 43
Post-War Plans, Small Communities . . . 51

Street Cleaning and Snow Removal
Enlist Public Aid in Snow Removal . . . 7
Snow Removal Volunteer Workers . . . 44
Snow Removal by Contract . . . 48

Street Construction and Maintenance
Federal Aid for Street Projects . . . 5
Steel Gratings for Asphalt Roads . . . 13
Don't Make Streets Serve Two Masters . . . 13
4½ Miles of Street Resurfaced . . . 13
Cities Pool Road Machinery . . . 13
New Street Project . . . 13
Hindsight vs. Foresight . . . 42
Post-War Plans, Small Communities . . . 51
Post-War Plans, New York City . . . 53
Dallas Stabilizes with Soil Cement . . . 81

Traffic and Transportation
Post-War Plans, New York City . . . 53
The Trolley Coach . . . 89
Indispensability of Transit . . . 91
Good Transit, More Liveable City . . . 91
Cities Must Deal with Transit . . . 93

Water Supply and Purification
Light Weight Filter . . . 9
Water Works Operation . . . 9
Did You Know That . . . 9
Manpower Problems . . . 9
Post-War Plans, Small Communities . . . 51
The Spiractor . . . 71
WPB Water Division . . . 72
Villages Like Good Water, Too . . . 83
Wartime Water Rates . . . 85

See pp. 17, 18, 21, 22, 24, 107, 109, 111, for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 134

THREE WAYS

To Get the Most Out of Your Meters

1

CHECK PERIODICALLY

Conserve as you serve by making your present meters last for the duration. Your country's interests come first. Institute an immediate program of inspection, repair and maintenance. Remember, an inaccurate or inoperative meter is a liability.

2

REPAIR AND TEST THOROUGHLY

Don't replace meters when they can still be repaired. Good meters require but little attention, but when they are renovated, do a complete job. A properly repaired meter should test as good as new. The cost of a thorough overhaul is only slightly more than that of a slipshod job.

3

BUY ONLY THE BEST METERS

When you buy war-model meters, buy only the best. The Pittsburgh-National Meters shown below all comply with the WPB Limitation Order. They provide top wartime measurement value. They will serve you faithfully for the duration and for years to come. Today, as always, there's a Pittsburgh-National Meter for every kind of service.

Back The Attack
With War Bonds

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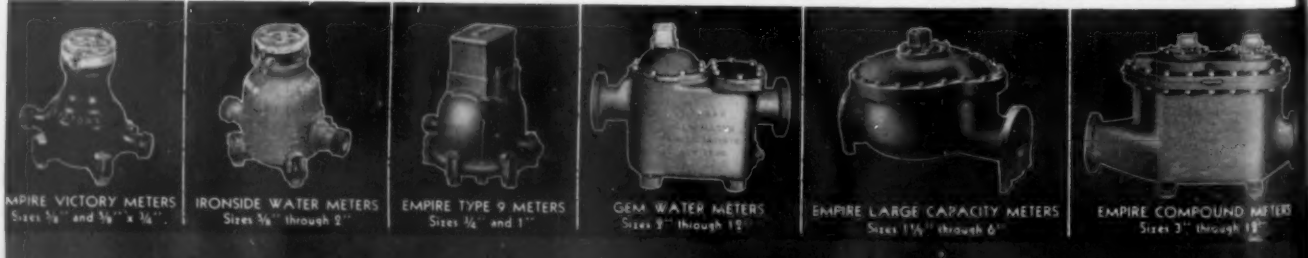
Learn all about the complete line of Pittsburgh-National war-model meters. Write, asking for Bulletin W-539.

PITTSBURGH-NATIONAL IRON CASE WATER METERS



EMPIRE VICTORY METERS Sizes ⅝" and ⅝" x ¾"
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GEM WATER METERS Sizes 2" through 12"
EMPIRE LARGE CAPACITY METERS Sizes 1½" through 6"
EMPIRE COMPOUND METERS Sizes 3" through 12"

Inequitable Real Estate Assessments

Important Facts and Recommendations from a New Legislative Report

A LEGISLATIVE report for New York State may prove helpful wherever original assessing for taxation is an ever-present plague to public budget makers and realty owners alike. The document under discussion*, published last month, summarizes the work of three years, 1940-43, by the Joint Legislative Committee on Assessing and Reviewing. The chairman was Senator William Bewley. His recess address is Middleport, N. Y.

This new report differs from most reports on local assessing. It places responsibility for assessing ills first on legislatures, governors, and owners; it does not make local assessors the scapegoats.

Legislatures are shown to have delayed action that was clearly needed, even mandated by the constitution. Executives are shown to have withheld action due from their constitutional and statutory powers and duties. Owners, including the municipal bond world, are shown to have failed to press for enforcement of laws passed for their protection. The findings of fact and conclusion are presented in short paragraphs from official records and committee testimony.

Action Urgently Needed

"The urgent need now is for action and not more investigating," says the Chairman's letter to the legislature. There follow in quick succession, six major committee recommendations; 29 steps proposed for State Tax Commission to take under existing law; 14 proposals for new legislation; and the essence of what the Secretary—an assessor when named on the committee, now Assemblyman Joseph R. Younglove—saw when visiting the state's city assessors. Later there are 16 bill-drafts for submission to the legislature after public discussion.

Over-assessing, under-assessing, inflated borrowing power, inflated taxing power, inequities and inefficiencies of assessing are declared "epidemic" and are illustrated by record examples. State equalization is shown to be ineffective and misleading, in fact a spur to over-assessing and over-taxing. State supervision is shown to have been lacking. Manuals of standards and instructions are reported lacking.

Of the frequently heard contention that over-assessing is a social necessity, the report says: "Not only does the Committee find a lack of legal basis for evasion of the constitutional tax limit, but it can find no basis for assuming the necessity for so doing."

To the bond world and official budget-makers who have expressed or harbored "widely prevailing and cultivated" fear that "reducing assessments from far above to full value would depreciate the value of outstanding securities and therefore impair municipal credit," the report points out that the constitution unequivocally shows such fear ungrounded.

Local administrative review of assessments complained against is called a denial of justice. Court reviews "give too little relief at too much cost" and "help too few." Examples are given.

Remedies Proposed

Other unusual features include: proposal that grand juries be specifically authorized to investigate assessing; reasons for local assessing and state supervising at the Capital that can be shown as working models for all local assessors; and a proposal that biennial assessing for large cities and triennial assessing for other units be permitted where now annual assessing is mandatory.

The review plan proposed by the Bewley Committee differs widely from state review plans elsewhere: the State Tax Commission not only would have no hand in reviewing as in Massachusetts, but would itself be subject to review for assessments of special franchises and for equalization; the Governor would be responsible, would appoint reviewers, whose terms would be coterminous with his; instead of a board or several boards, there would be a singleheaded Review Commissioner with technical assistant and deputies; reviews could be by examinations as well as by hearings; underassessments would be reviewed; local mis-assessing and reviewing must be corrected wholesale; operation facts, results, and recommendations must be reported to the Governor and Legislature by January 1st, each year.

* "Assessing and Taxation Needs in New York State, Being the Final and Summarizing Report of the Joint Legislative Committee on Assessing and Reviewing." 227 pages. Requests for copies should be made to Senator William Bewley at Middleport, N. Y.

Federal Aid for Planning City Street Projects

CITIES interested in taking advantage of federal-aid funds for advance planning of traffic facilities for post-war construction should apply to their respective state highway departments.

In the language of the Defense Highway Act of 1941 which authorized $10,000,000 for advance-planning work. "The Commissioner of Public Roads is authorized to make . . . advance engineering surveys and plans for future development of the strategic network of highways and by-passes around and extensions into and through municipalities and metroploitan areas."

The Act states further that "By agreement with the state highway department of any state, any project carried out in such state under the provision of this section [on surveys and plans] may be carried out through or in cooperation with the state highway departments in such state."

The Act of July 13, 1943, provides that federal-aid funds remaining available to a state may be used for engineering and economic investigations of projects for future construction and for surveys, plans, specifications, and estimates for post-war highway improvements. The amount to be so used in any state may not exceed the state's share of an apportionment of $50,000,000 according to the federal-aid formula. Participation in planning under this act is not limited to any particular system of roads, but it is required that the planning be in cooperation with the state highway departments.

Since by law the federal contribution to advance planning of post-war construction must be matched by state funds before it becomes expendable, cities may find it advantageous to indicate their willingness to provide at least a part of the state's contribution for particular projects they propose.

Cities may also find it productive to offer the services of their engineering staffs in planning the desired facilities. The technical personnel of the state highway departments has been greatly depleted since the war began. Most departments, therefore, would probably be favorably influenced by the offer of engineering as well as financial cooperation in projects proposed by the cities.

There's a Christmas rush on telephone wires, too

Help keep war-crowded circuits clear on December 24, 25 and 26.

Please use Long Distance only if it is vital.

War needs the wires—even on holidays.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Enlist Public Aid in Snow Removal

"WE probably won't be able to keep crosswalks open when it snows," said Sanitation Commissioner William F. Carey of New York City, on the first page of the November 21 *New York Times*. He continued: "It will be up to the individual householders in most cases to keep the gutters and sewer openings clear of snow."

The reason for this is that, as elsewhere, manpower and dump trucks are lacking. Against 3,000 private trucks available for snow removal in New York in former years, 185 are all that have been registered this year. The situation is made worse by the federal government's having commandeered certain of the city's equipment including 14 mechanical snow loaders.

Forseeing this condition in hundreds of towns in the snow belt, THE MUNICIPAL INDEX a year ago proposed measures which could be taken to alleviate it as far as possible. One of these measures is more liberal and widespread use of rock salt for snow removal. Scores of city officials requested more information on the subject.

THE AMERICAN CITY now offers an additional suggestion that where difficulties are expected in removing snow this winter, the cities place numerous boxes of rock salt on sidewalks at intersections or other strategic spots, for use by the taxpayers, and refill these boxes with salt whenever necessary. Citizens and householders should be urged to turn to and sprinkle salt when a snowfall starts or reaches ½ to 1 inch depth. This public cooperation with the street cleaning forces of the municipality would be a genuine help to everybody in the town and the strangers within its gates. The city government would receive local approval for taking constructive action instead of falling back on excuses. Finally, the real ice and snow melting properties of salt—sodium or calcium—would find even greater public recognition. Incidentally, this idea of placing boxes of salt on the sidewalks is common practice in Detroit, Mich.

Additive Type Oils

Write THE AMERICAN CITY if you would like to know more about the superior heavy duty detergent lubricating oils for internal combustion engines.

Correct Lubrication

DOZENS of companies make and market lubricants, of which the cities use about $12,000,000 worth a year. Some sell oils and greases; others sell modern lubrication. Knowledge of lubrication affects the design, not to mention the operation, of machines. The art of lubrication, the steady improvement of the products, has gone forward as rapidly as the improvement of machines; yet lubrication specialists say that there are 1943 machines using 1925 lubrication. One oil company, by recommending the correct products for given applications, has increased production, lengthened tool life, and improved finishes in a thousand war plants.

Almost any product consists 20 per cent of the people who make, sell, and service it. Knowing how and telling it to customers is quite a chunk of any product.

Property Owners Become Their Own Assessors

A NEW system of mailing out assessment blanks in Kansas City, Mo., substituted recently for house-to-house canvassing, has reduced assessment expense 28 per cent and increased total valuation 17 per cent, the National Association of Assessing Officers reports.

Instead of using 300 to 350 extra field deputies, most of whom were inexperienced, to make personal calls, a mechanical addressing system was installed and records were made for personal, manufacturers', merchants', and other tax rolls. Blanks were run in duplicate, the original mailed to the taxpayer along with a self-addressed stamped return envelope.

The city mailed out 176,021 blanks and received 90,923 statements, or 52 per cent. Only 45,591 estimates, 26 per cent, had to be made by deputies. 39,507 returns were sent to persons who had died or moved from the city.

The increased valuation that resulted is accounted for in two ways, the Association says. Either the taxpayer has become "tax conscious," or when he received his return by mail he had time to sit down and give it ample study. The assessing office was able to get a better and more intelligent return than when deputies made the taxpayer stop his work and make out the return while the deputy waited.

Service That Wears

HOW many remember (show your hands please!) "More Precious Than the Price," which appeared on page 7 of the January 1941 issue of THE AMERICAN CITY? It told of the burning of the Hatboro, Pa., high school, and how the Insurance Company of North America got it rebuilt and in operation in two weeks.

Chester H. Barnes, Supervising Principal of the school, wrote the company a letter of appreciation of the intelligent conscientious service. In fact, the entire borough was pleased and grateful.

That was three years ago. Is it all water under the bridge? How does the borough feel now? Asked by THE AMERICAN CITY, Mr. Barnes said:

"We all feel very fine about the way the whole set-up was handled. It was 100 per cent perfect! Since then six neighboring school districts have contacted us; one very recently. They all wanted their insurance handled the same way. They wanted a company to make a survey to determine insurable values. Then they wanted a single policy covering all properties running three years with one-third of the total premium due each year."

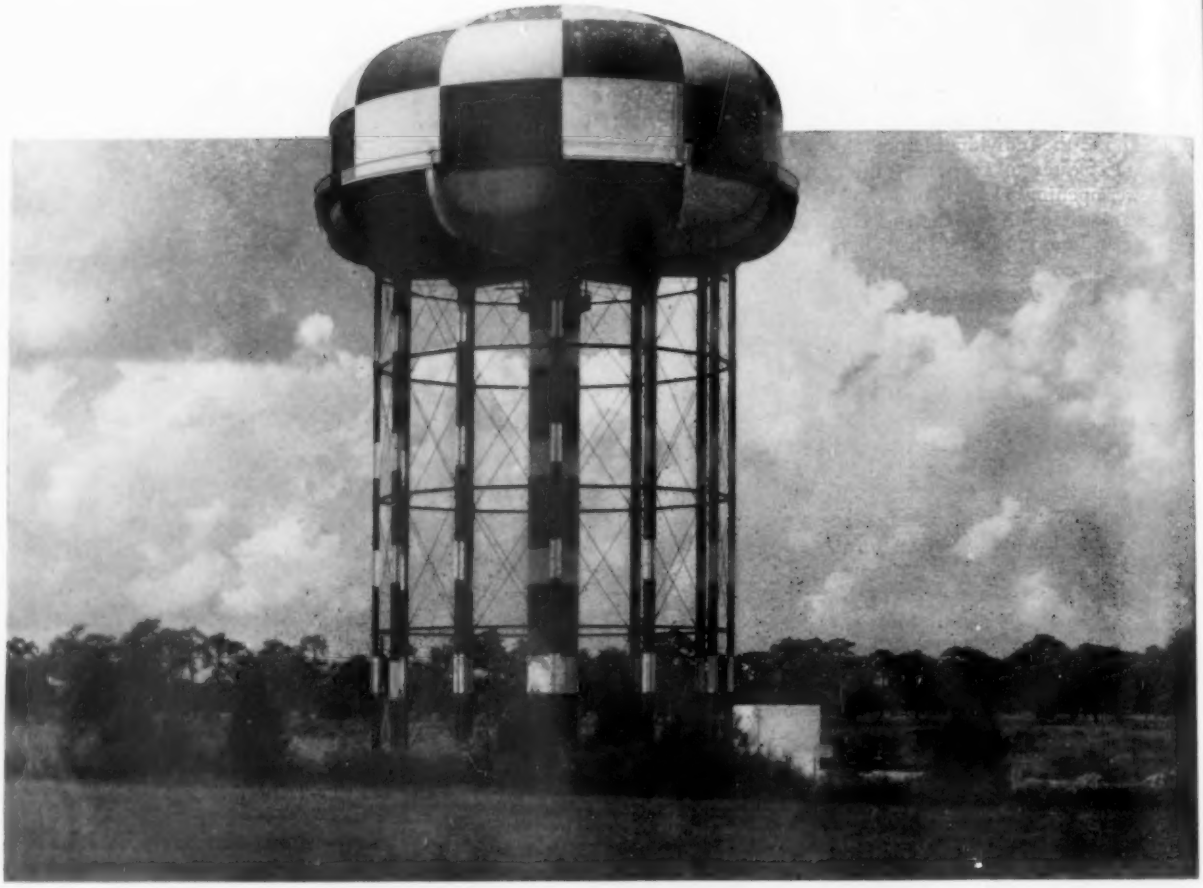
Service, then, is not always making good a money loss or a defect in the product. It is sometimes finding out what would help the customer or client most, and doing just that, cheerfully. Any product with that kind of service behind it, has it all over its competitors.

Better Specifications Secure Better Products

A SEWAGE-TREATMENT man of the Public Works Department, New York City, was discussing how, in his opinion, specifications improve the design and construction of some products. One of the heavy jobs at many sewage plants is pumping sludge. New York operates a flock of sludge pumps in its Wards Island, Talmans Island, Bowery Bay, and Coney Island plants. At least four makes are in service. The performance of each is watched, and when new sludge pumps are needed, the new specifications are likely to be written around the make or design of pump which has been giving the best service. While this appears to favor the particular maker, it causes the other bidders to submit designs meeting the stiffer specifications; to be in the running, they must improve their design and build better pumps.

New 1,500,000-gal. Horton Tank

FOR TAMPA, FLORIDA



In addition to this new 1½-million-gal. tank Tampa's distribution system includes three 500,000-gal. Horton elevated tanks, a 3,500,000-gal. concrete reservoir and a 100,000-gal. elevated tank at Port Tampa City.

FACED with the responsibility of supplying adequate water to approximately 171,000 residents, many vital war industries and military camps, the city of Tampa, Florida, recently erected a 1,500,000-gal. Horton elevated tank to take out the peak fluctuations in a certain area. Because of the demands on the water system brought about by the needs of war, pressures in this section at times of peak loads were extremely low. The new elevated tank was recommended to relieve this acute condition.

Tampa's benefits secured from Horton elevated tanks are typical of how many municipalities have learned to depend on this type of storage to meet the water demands in times of emergencies.

Other benefits provided by elevated storage are: (1) Provision for pumping during off-peak periods, (2) adequate reserve in case of power failure, and (3) maintenance of an ample reserve fire protection.

ARMY E NAVY

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Seneca, Ill. shipyard
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New York 6.....3390-165 Broadway Bldg.
Cleveland 15.....2262 Guildhall Bldg.
Havana.....402 Edificio Abreu
Birmingham 1.....1586 North 50th Street

Tulsa 3.....1646 Hunt Bldg.
Houston 1.....5615 Clinton Drive
Philadelphia 3.....1644-1700 Walnut St.
Washington 5.....330 Bowen Bldg.
San Francisco 5.....1083 Rialto Bldg.

Water-Works Operation

Did You Know That . . .

THE average medium-sized water works employs one man for every 1,000 persons served. In the larger cities, the ratio is 1:1,500. Carrying this further, for each man employed in a water works there is about $75,000 worth of capital investment, and about 600,000 pounds of metal has been used. In other words, few men are required for the normal water-works operations; "feather-bedding" is almost non-existent; and there is little possibility of using fewer persons to maintain service. The employment of women on work formerly done by men is increasing, but even with these changes the personnel problems of water works will be more severe during the next six months.

These figures were disclosed by Harry Jordan, Secretary of the American Water Works Assn., at a recent Wisconsin meeting held in Milwaukee. Mr. Jordan also said that if water-works men thought manpower was critical now, all they had to do was wait a few months and see a real problem.

Light Weight Filter

LEAVE it to the Army to figure out a way. Something better than sand, weighing 200 pounds per square foot of filter surface, was needed for portable filters—so Uncle Sam's military engineers devised one. Taking their cue from industrial practice they substituted diatomaceous silica for sand and not only cut the dead-load weight to a scant 0.1 to 0.5 pounds per square foot, but also arrived at some interesting results.

They found, for example, that the diatomaceous silica was superior to sand as a filter medium. They observed that unusually high-filter rates were possible, and they discovered that this filter medium produced a strikingly clear water. Speaking before an engineering session of the American Public Health Association Conference held in New York recently, Capt. H. H. Black of the Corps of Engineers told how rates may be obtained sometimes as high as 18 gallons per square foot per minute. One test filter designed to operate between 2½ to 6 gallons per square foot per minute, removed 200 ppm alluvial clay.

The filter has significant applications in the post-war water-treatment field, particularly for small communities, institutions, swimming pools, resorts, or similar locations. Important in its construction is that the diatomaceous earth needs a rigid support. Aluminum oxide, carbon, and monel wire screens all have been used successfully as the support, or filter membrane, on which the filter cake forms.

"The distinguishing characteristic of the filter may be summarized," said Capt. Black, "by the higher output per unit weight that can be obtained, the improved quality of water produced, and in simplified operation."

Manpower Problems and Their Solution

SIGNIFICANT was the discussion of manpower problems at the Annual Conference of the 4-States Section of the American Water Works Association held recently in Philadelphia. The panel discussion disclosed changes in employer-employee attitude, methods of handling draft problems, and experiences in the use of women operators and technicians.

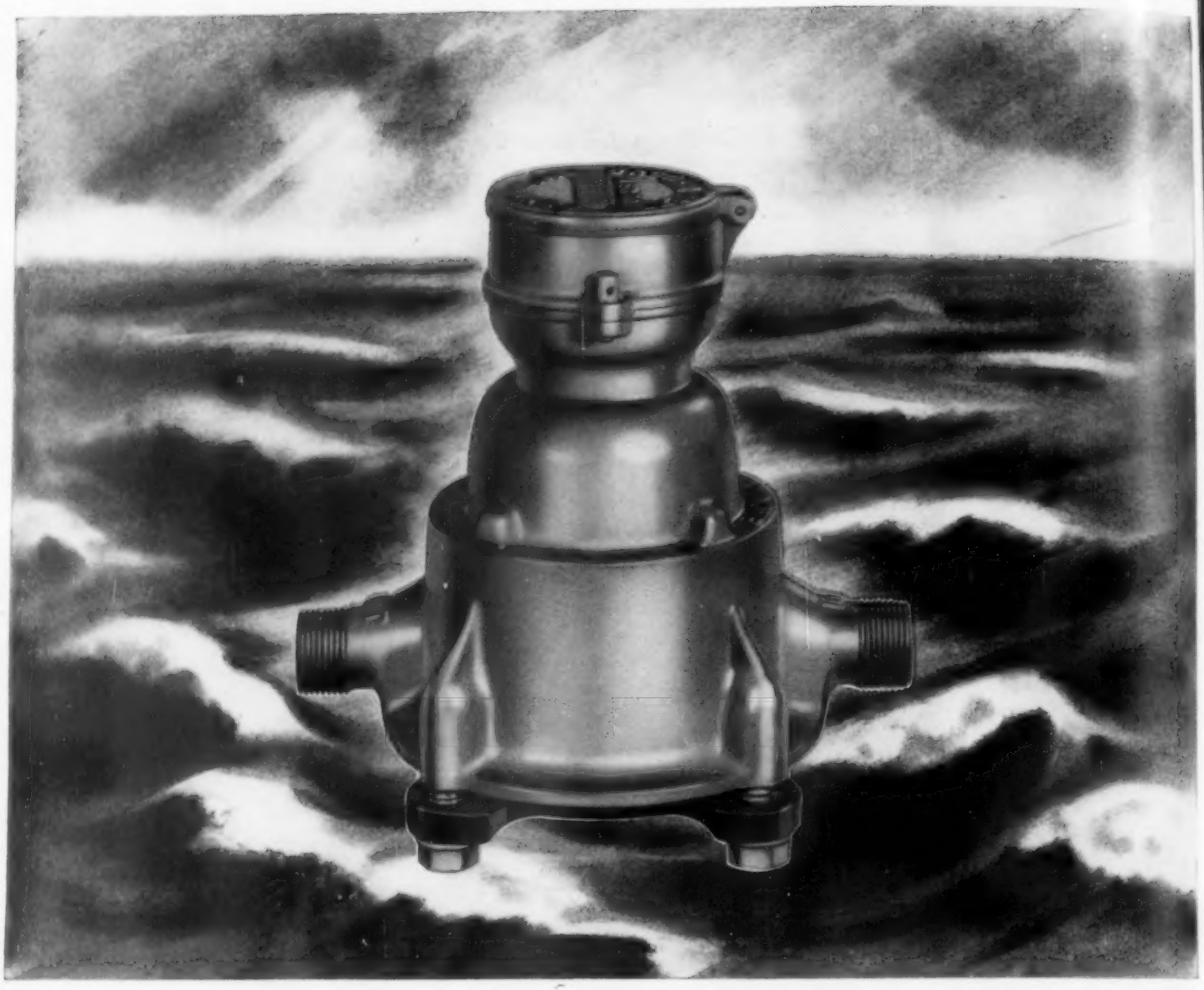
Speaking for the municipal water works, Rennie I. Dodd, Manager of the Chester Municipal Authority, stated flatly that the labor freeze does not work—that it is impossible to keep a man on a job against his will. When advertising for replacements, he found that he received best results by emphasizing permanence of employment. He stated that a man smart enough to see the advantage of a steady job was generally a better worker.

The vital importance of good employer-employee relations was emphasized by C. J. Alfke, Executive Vice-President of the Hackensack Water Company, speaking from the viewpoint of the private utility. "This came sharply to our attention when a local chamber of commerce some time ago asked for a list of our employees with a service record of 25 years or more. It embarrassed us to realize that recogntion for long and faithful service had to come from the outside rather than from our own organization." Mr. Alfke also discussed his experiences with labor unions and told how their present policy operated in maintaining improved employee relations.

R. J. Stewart, Superintendent of Utilities at Edgewood Arsenal, introduced as the man who "knows all about women," stated that after three weeks of training and several months of experience in plant operation, the women operators in his plant had learned to handle water varying in turbidity from 10 to 10,000 ppm.

"The presence of women in the plant brought about a lot of changes," he said. "For example, we now have curtains on the windows, we have little potted plants and vines growing here and there, and generally a more homey atmosphere. He expressed confidence in their ability to handle emergencies.

Always expect the unexpected when you are excavating for water mains. W. Kehoe, Chief Engineer, City Utilities, Fort Wayne, Ind., sends us these interesting photos taken during a recent water-main extension. At left are some old timber piles that have been buried for a number of years, while at right is an old flume which still carried enough water to complicate the construction. U. S. Cast Iron pipe and Iowa gate valves went into these new extensions.



Now Badgers Are Proving Their **Ruggedness**

Sound engineering, durable construction, lasting dependability, designed and built into Badger water meters for 38 years, are proving their value today. These qualities are reflected in longer life, sustained accuracy, less need for repair and replacement and lower maintenance cost.

For 38 years Badger has stood for the finest materials, craftsmanship and presicion manufacture. Communities that invested in Badgers have proved the wisdom of their selection by the trouble-free service their Badger water meters have given. The Badger organization is prepared to help you with conservation of water meters — now a patriotic duty. Whether your problem is one of maintenance, repair or replacement, feel free to call on us.

BADGER METER MFG. CO.
MILWAUKEE, WISCONSIN

BRANCH OFFICES: New York City
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Representing recognition by the Army and Navy of especially meritorious production of war materials.

Sewerage and Sewage Treatment

Blasting the Barriers to Post-War Planning

HERE are two of the stumbling blocks to adequate post-war planning in the sanitation field that were pushed to the side during the Fourth Annual Meeting of the Federation of Sewage Works Associations held in Chicago recently. The first was, "Can engineering design be adequately conceived to meet post-war requirements?" the second, "Will equipment be developed that will make obsolete what is specified in present plans for post-war construction?"

Can Designers Anticipate Post-War Needs?

Charles A. Emerson, consulting engineer of the firm, Havens and Emerson, emphasized that planning today is no different than it was before the war. He pointed out that engineers always have had to look for at least 10 to 20 years into the future when analyzing a community's problems. Some new problems have presented themselves, he said, because of the war; however, they are not insurmountable and can be subjected to rational analysis. Confidence in the engineer during the pre-war period, he pointed out, should justify continuing confidence now.

Is Revolutionary Equipment Expected?

Spiking the fear that some new war-borne revolutionary design would make all present sewage equipment and processes obsolete, was the task of W. B. Marshall of the Chain Belt Co., Milwaukee, Wis. To show how unfounded this assumption was, he gave results of a questionaire in which leading water and sewerage manufacturers participated. In answer to the question, "Generally speaking can an engineer safely specify your product in accordance with the latest pre-war catalogs in the design of a post-war project?", every manufacturer replied "Yes."

Carrying this further, he said, a second question was asked, "Do you intend to market any radically new product in the immediate post-war period?" To this, 50 of the manufacturers answered "No," and two answered "Yes." Of these two, both said that adequate data already were in the hands of engineers.

For a final step, he stated, a third question was placed before the manufacturers: "Do you have definite intention of marketing any radically new product at some time in the post-war period after adequate time for development, testing, and marketing plans?" To this, one-third of the manufacturers replied in the affirmative. However, most pointed out that this chiefly reflected a desire to improve their products, and that manufacturers will need the cooperation of operators and engineers in all these developments.

"I would like," said Mr. Marshall, "to emphasize the fact that radical changes are not going to make present methods obsolete, and that time-tested practices will still dominate the picture in water and sewerage projects built after the war."

You wouldn't know by looking at it that the repairs to the distributor arms for the trickling filter used at Pryor, Okla., were home made. When it was reconditioned recently, old 6-inch steel oil-field pipes were used by welding them to the center column.

Clay Sewer Pipe WPB Regulations

AS far as clay sewer pipe and WPB is concerned, the United States, like Gaul, is divided into three parts. In this case, however, it consists of Washington and that part of California north of the 26th parallel (zone 3); California south of the 36th parallel (zone 2); and the rest of the country (zone 1). This is set forth in WPB's Limitation Order L-316, defining permissible vitrified clay sewer pipe items which may be manufactured after Oct. 25.

A Correction

IT is disappointing to find that the tabular data used by Mr. N. I. Kass in his constructive article on grease reclamation was printed incorrectly (see "How New York City Utilizes Sewage Scum" pp. 56-57, November). For this reason we are publishing the corrected tables showing both the record of the scum sales and an analysis of the product, and sincerely hope that the data published previously did not damage the story's value to our readers interested in this subject.

As Mr. Kass pointed out, the disparity between the quantities of scum sold and the sewage flow at each plant is caused by the differences in personnel and skimming mechanisms rather than any differing characteristics in the flow. The sewage in all plants is similar and consists chiefly of domestic wastes.

Table I

RECORD OF SEWAGE SCUM SALES IN NEW YORK CITY

Plant	Type of Plant	Sewage Flow MGD	Scum Sold Pounds June	July	Aug.	Sept.	Total
Wards Island	Activated Sludge Process	200	24,480	13,140	17,640	21,600	76,860
Bowery Bay	Activated Sludge Process	35	17,820	20,880	25,740	23,040	87,480
Tallmans Island	Activated Sludge Process	14	20,410	17,820	17,100	13,140	68,470
Coney Island	Chemical Precipitation and Chlorination*	48	14,580	31,860	28,980	44,640	120,060
ALL PLANTS		297	77,290	83,700	89,460	102,420	352,870

* During summer season only; plain sedimentation rest of the year.

Table II

ANALYSES OF SCUM SOLD

Plant	July Per Cent Solids	July Per Cent Fat	August Per Cent Solids	August Per Cent Fat	September Per Cent Solids	September Per Cent Fat
Bowery Bay	33.2	77.8	44.3	78.9	59.4	74.6
Tallmans Island	37.9	76.9	31.6	81.6	41.1	81.4
Coney Island	44.2	68.3	40.8	80.9	53.1	73.2
Wards Island	...	...	45.0	78.4	...	...

When Roads are like this

THE greatest business deadener in the world is a heavy blanket of snow! When snow hits like this the receipts fall off for "the butcher, the baker, the candlestick maker" and all down the line from movie to drug store.

The business of a community should be the prime interest of every city government. Business alone is responsible for growth, and proper snow removal is a municipal government function.

Every municipality can plan to have Snogo protection in the future. There is a Snogo within the limits of every city budget.

Snogo picks up and loads snow in one operation. Trucks move rapidly and are loaded in 10 to 20 seconds. Snogo cleans right to the curb. No banks are thrown up against parked cars. Walkways, drives and gutters are left open, and there are no drifts left to blow back on the street or cause slush that freezes into dangerous ruts.

When Snogo gets through the job is all done until the next snowfall.

Plan to make your city safer.

Keep winter streets open for the fire department, police department, ambulance and doctor. Snogo assures better, cleaner cities.

KLAUER MANUFACTURING CO., DUBUQUE, IOWA

SNOGO

A SNOGO For EVERY BUDGET

Street Improvements

Steel Gratings for Asphalt Roads

ARMORING with steel grating for moderate-cost bituminous street paving, crops up as a possibility through the medium of a test project, 48 feet long, recently installed in Darien, Conn. The project is the joint venture of the town of Darien and the Irving Subway Grating Co., Long Island City, N. Y., and represents a possible post-war development of the technique employed at the battlefronts in laying landing mats for the air forces.

The work, completed under the general direction of Walter Bates, Town Engineer, is expected to give a practical test of the grating under normal passenger and truck traffic. The technique calls for attaching steel-grating panels each 2 feet by 12½ feet, filling the mesh with ordinary construction sand, and applying a coating of road oil.

Don't Make Same Street Serve Two Masters

TO paraphrase a well-known biblical quotation, modern streets cannot serve two masters. This is the opinion of G. Donald Kennedy, Vice-President of the Automotive Safety Foundation and formerly Michigan State Highway Commissioner, expressed before the American Public Works Association annual meeting held in Chicago recently. Mr. Kennedy feels that streets have two functions: to move large volumes of traffic safely and efficiently from one section to another; and, second, to provide access to land, mark boundaries, and perform other direct services to property.

To effect this separation of duties, Mr. Kennedy pointed out that it will be necessary to superimpose on the traditional gridiron street pattern an entirly new network of trafficways, free from stop lights, grade crossings, pedestrians, parking, and other conflicts. These expressways should be linked at convenient but infrequent intervals to the regular street system, thereby allowing these local streets to serve the land without the conflict and confusion of through traffic.

"This job need not be as costly as we might imagine," he stated. "We can close minor intersections, and confine through-traffic to major streets

Steel mats similar to those used for temporary military airports get a trial as a post-war road possibility in Darien, Conn. On this test street workmen apply a bituminous wearing surface by hand.

about a mile apart. We can take advantage of natural obstacles to cross-traffic—such as rivers, railroads, public lands, and natural topography—and utilize other traffic-engineering devices that already exist."

Glendale Resurfaces 4½ Miles of Streets

GLENDALE, CALIFORNIA, has recently awarded a contract for the resurfacing of 4½ miles of streets, involving approximately 96,000 square yards of surfacing, according to J. C. Albers, City Engineer. The material to be used is pre-mixed Macadam. The surfacing will be approximately 1½ inches in thickness, and a spray coat of bituminous material will be applied before the pre-mixed Macadam is laid. The contract price for the material, furnished and laid, is $3.00 per ton.

Cities Pool Road Machinery

A CLEARING house for construction and maintenance equipment used by cities, counties, and the state highway department is under development in Texas, the American Municipal Association said recently.

Since the equipment situation is becoming more critical in all branches of government in the state, municipalities need machinery for short periods of time. They may also need replacements, which there is very little possibility of obtaining because of shortages of raw materials.

The League of Texas Municipalities and the state highway department found an equipment pool would be advantageous in maintaining roads, streets, and other public works for the duration. The clearing house will have available information concerning used equipment all over the state, which might be rented, leased, borrowed, or even purchased for repair work.

If carried out, the plan would make it possible for any city in need of renting, leasing, or buying used equipment to write to the highway department headquarters. The department would attempt to locate owners of such machinery and place them in contact with the city, so that municipal officials and the owner could negotiate for rental, lease, or purchase.

Plans are being studied for a statewide pool in Iowa with the arrangement similiar to that in Maine where cities and the state highway department have been pooling their street and highway equipment for some time. Machinery, which otherwise would be idle, is being loaned or rented to communities where it is needed for repair and construction work. Ample equipment was found to be available by the Maine Municipal Association, but proper distribution was essential to insure all cities enough equipment for 1943 road work.

New Street Project to Eliminate Bottleneck

COUNT among the essential war projects a new street improvement for the city of Springfield, Mass. According to Regional Director John M. Gallagher of the Federal Works Agency, this city has Presidential approval of a grant of $9,788 in Lanham Act funds to assist in the improvement of Walnut Street between State and Hancock Street for a distance of 3,625 feet. The total cost will be approximately $39,600.

The present surface of brick and woodblock will be replaced with a 3-inch bottom course of bituminous macadam over the present concrete base with 1½ inch wearing surface of bituminous concrete and necessary appurtenant work.

Walnut Street is a main crosstown artery which has been subjected to such heavy traffic that parking has been prohibited to relieve congestion.

THERE'S EXTRA PERFORMANCE IN EVERY ATTACHMENT with

ALL-WHEEL Drive ALL-WHEEL Steer

Bulldozing over the edge of a fill. All-Wheel Drive provides maximum traction; All-Wheel Steer provides exceptional maneuverability.

Scarifying tough blacktop. The alloy tooth points are removable; the tooth shanks are adjustable. The block folds up to give unusual throat room.

Loading into trucks a windrow of earth and sod, which has been "pulled" from ditch to shoulder by the blade of the "99-M". Highway departments find the Loader unequalled for ditch and shoulder maintenance. Contractors find many uses for the Loader on work involving shallow excavation.

All-Wheel Drive and All-Wheel Steer provide the traction and maneuverability needed for effective plowing and winging under any and all conditions.

The Roller has many uses on construction and reconstruction work, and on many materials, including gravel, blacktop and soil cement.

THE AUSTIN-WESTERN ROAD MACHINERY CO.

Austin Western

AURORA, ILLINOIS, U. S. A.

BUY MORE WAR BONDS

Public Safety

Keep Signs Away from Poles

CAN you spot the hazards in the accompanying pictures? Visualize what would happen to a lineman falling on one of these signs or fire plugs, says H. G. Tripp in the September *EPB Spotlight*. The Electric Power Board of Chattanooga, Tenn., has set up a program of safety measures which should reduce accidents on and near the poles. Signs obstructing a clear working space will be torn off. All new signs and federal markers on lighting poles will be reported to the safety engineer with a request that they be removed. Step no. 2 involves moving metal-post signs 10 or 12 feet away from the poles.

Fire-plug hazards cannot be eliminated in all cases by setting poles away. The city engineering department will be asked to carry the thought of safe distance in mind when planning new construction, especially in residential areas, where a pole can usually be set 12 feet back without a fault in pole spacing.

"To make yourself a safety engineer," says Mr. Tripp, "is simple. Taking the case listed here, picture yourself on the pole at the cross-arm, your spurs stuck in the pole, one hand holding to the arm while with the other you reach to unfasten the safety-belt snap and put the belt around the pole. As you start to reach around the arm and pole with the belt, and one spur rips a splinter out of the pole and you drop—will you straddle that pointed sign? Will you catch it in the middle of your back? Can you think of any way you would like to hit it? Brutally frank, isn't it? No, I believe that you, as does the lineman, would rather hit the ground. Easy to figure out when you put yourself in the spot isn't it? And have you ever noticed those sharp ornamental points on top of traffic lights "frequently set next to poles?"

F.M. Radio Gives Greater Range with Less Power

THE Police Department of Gary, Ind., has one of the first frequency-modulated radio systems in the country. It is of General Electric make, as was the A.M. system which it replaces.

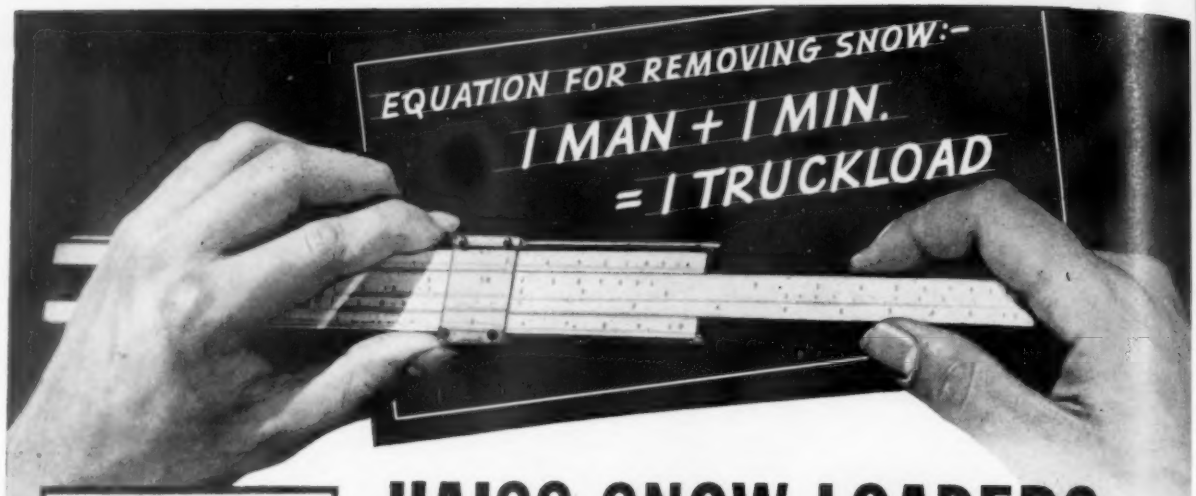
The old system was the best available up to three years ago when the new was installed, but in the large area which our Department must cover there were numerous dead spots. There was a 75-watt main station with 15-watt car transmitters.

The F.M. system uses 25-watt transmitters in the main station and in the 23 cars, all on the same frequency of 39.1 megacycles. With 25 watts F.M. a greater range is attained than with 75 watts A.M. There is comparative freedom from static and noise, and car-to-car conversations have been carried on over 25 miles, with 10 miles as a normal operating range. Conversations have taken place between cars in Gary and downtown Chicago 25 miles away. This increased car-to-car range has been helpful in chases and blockades.

A transmitter located in the basement of a steel building housing a power plant, surrounded by electrical machinery, has operated a radio car five miles away. The machinery interference would stop an A.M. set from receiving, while the steel walls would blanket transmission. The new equipment is more reliable and costs less to operate and maintain.

MILLARD T. MATOVINA,
Chief of Police, Gary, Ind.

Don't put signs on or near poles. They are dangerous as are near-by fire plugs.



HAISS SNOW LOADERS

The Haiss Snow Loader, simple to operate and rugged in design, will tackle city snow removal at a rate exceeding 10 cu. yds. per minute. Leaving behind it a clean 9-ft. path, the Haiss Loader will pick up a windrow—plowed snow pile—wet, dry or frozen. The powerful functional design is distinctively "Haiss"—and worthy of special investigation.

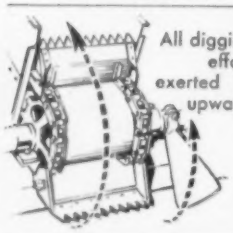
Where priorities are available, the Haiss Snow Loader is the modern answer to snow-loading problems . . . Write for Catalog.

EXCEPTIONAL ENGINEERING ADVANTAGES

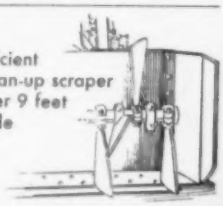
Revolving propellors cut into hard-frozen snow piles

Sturdy tooth-edged flights of scoop shape

All digging effort exerted upward



Efficient clean-up scraper over 9 feet wide



Non-clog creeper treads with sure-grip grousers

GEORGE HAISS MFG. CO., INC., 140th ST. & PARK AVE., NEW YORK 51, N. Y.

HAISS

Keep Up-to-Date on New Equipment

Please check over the following list of interesting catalogs obtainable free of charge and either write direct to the manufacturers for their literature, or, if you prefer, put a circle around the identifying numbers below to indicate the catalogs you want, mail this coupon to The American City Magazine, 470 Fourth Ave., New York 16, and we will see that the catalogs are sent to you without expense or obligation on your part.

11/43

911	912	913	914	915	916	917	918	919	920	921	922	923	924	925
926	927	928	929	930	931	932	933	934	935	936	937	938	940	941
942	943	944	945	946	947	948	949	950	951	952	953	954	955	956
957	958	959	960	961	962	963	964	965	966	967	968	969	970	971

Name ..... Position .....

Address .....

Traffic and Street Lamps

911. Duro Test Corp., North Bergen, N. J., will send you Catalog 43C dealing with their complete line of regular and special lamps made by this company for your traffic and street needs. Literature discusses the various types of lamps and how they will fit your needs, and also shows how they will help you effect economies in your street-maintenance work.

Facts about Chlorination

912. If there is any doubt in your mind about how chlorine should be administered to either water or sewage, send for Bulletin No. 1093, issued by the Everson Mfg. Co., 214-16 W. Huron St., Chicago. This bulletin, entitled "The Sterelator," clearly outlines the difference between solution and direct chlorine feed and gives the advantages of each. It tells how the chlorinator works and gives easy-to-read illustrations and diagrams.

Chemical Feed Equipment

913. Do you know how the new Var-I-Feeder works and anything about its construction? This sturdy little chemical feeder made by Chem-Feeds, Inc., 77 Reservoir Ave., Providence, R. I., utilizes not only simplicity of design, but the latest in the modern construction. Plastic tubing and Saran fittings comprise only a few of its interesting features. Chem-Feeds, Inc., will send you drawings describing the way the equipment is constructed and how it may be installed.

Firebrick for Municipal Boilers and Incinerators

914. Bricks for boiler settings and patching material for repairing old settings are only two of the subjects discussed in the comprehensive little booklet that you may obtain from the Electro Refractories and Alloys Corp., Andrews Bldg., Buffalo 2, New York. This company, in addition, manufactures filter plates that will be of interest to sewage plant operators using the activated sludge process.

Salt Glazed Filter Bottom Block

915. The Ayer-McCarel-Reagan Clay Co., Brazil, Ind., has available data on "Armcre" their vitrified salt glazed filter bottom block for floors in trickling filters in sewage treatment plans. This literature describes the special characteristics of the block among them assurance of adequate air supply, elimination of clogging, and exact alignment to accomplish low friction losses. You will also find here a list of specifications on the block.

Pumping Digester Gas

916. If you are interested in a pump capable of safely handling the digester gas in your sewage-treatment plant, write for bulletin 31-B-15 issued by the Roots-Connersville Blower Corp., Connersville, Ind., covering its line of Victor-Acme gas pumps. While developed particularly for the industrial field, the ability of these gas pumps to handle gases and vapors of many kinds without external leakage makes them well suited for municipal service. This new bulletin covers the many advantages claimed by the manufacturer, based on over 85 years' experience, gives data that will assist in selecting the proper size and type, and lists the range of capacities and pressures.

Sight Flow Indicators

917. A new flow rate meter called Rota-Sight is the subject of Bulletin No. 101, issued by Fischer & Porter Co., Hatboro, Pa. You will find here a description of this instrument which is used as a protection against low or excess flows. The catalog discusses the construction and workings of this meter, the uses it may be put to, and lists maximum flow rates and operating pressures.

Reconditioning Pump Shafts and Rods

918. The International Nickel Co., Inc., 67 Wall St., New York, in its new booklet, "How to Recondition Worn Pump Shafts and Rods," gives valuable information on reconditioning pump shafts and rods made of Monel or "K" Monel metal. Four separate methods are explained. These consist of machining and refinishing worn sections; rebuilding and refinishing the section by welding; metal spraying; and heavy and hard electro-deposition. The booklet also lists suggestions for the proper operation of pumps to prolong the life of rods and shafts.

Sewage Sludge into Fertilizer

919. City officials interested in the use of sewage sludge as a fertilizer, may secure an interesting booklet on the subject by writing Royer Foundry and Machine Co., Kingston, Pa., for bulletin 645. This catalog discusses the need for the fertilizing materials contained in sewage sludge for certain plants and foods, and describes the workings of the Royer Sludge Disintegrator in transforming the sludge into fertilizer. The bulletin also shows how the Sludge Disintegrator may be used at city parks and golf courses for making top dressing, also for mixing material for walks and athletic grounds around schools.

Modern Fire Apparatus

920. Cities who are planning to increase fire department equipment or replace old apparatus, may secure valuable information from the American-LaFrance-Foamite Corp., Elmira, N. Y. This company is in a position to arm you with specifications so that you may intelligently decide on the proper equipment to meet your needs.

Sewage Clarifiers and Digesters

921. Round out your lists of references in the sanitary equipment field with the two bulletins furnished by the Hardinge Company, York, Pa., Nos 31-C and 35-A. You also can obtain carefully prepared assembly drawings showing how this type of equipment will be installed. Thickeners, clarifiers, and agitators all are discussed in these bulletins and drawings.

FM Police Radio

922. Municipal police chiefs will be highly interested in literature available from the Electronics Dept., General Electric Co., Bridgeport, Conn., on the G-E frequency modulation police radio. This new development insures instantaneous exchange of emergency orders and freedom from interference. The equipment is available to communities needing improved protection for local or nearby war production or military activities.

Water Lubricated Deep Well Pumps

923. Water-works men will be interested in the folder prepared by Layne & Bowler, Inc., Memphis 8, Tenn., entitled "Layne Water Lubricated Pumps." By means of illustrations they point out in minute detail the various parts of the pumps and give general construction details. The pumps are built for capacities ranging from 40 to 7,000 gpm.

Learn About Asphalt Street Equipment

924. Keep posted on asphalt equipment especially well suited for street construction by writing the Standard Steel Works, North Kansas City, Mo. They will give you literature on their distributors, heaters, tar kettles, asphalt sprayers, road rollers, and street flushers.

Wartime Instruction on Transit Use

925. City Engineers should be sure to get the new Gurley booklet, "Wartime Instruction in the Use of the Transit." Prepared by Lester C. Higbee, veteran engineer on the staff of the Gurley Co., it gives you the advice that you have been looking for on how to give your transit the special care required during wartime. Write to W. & L. E. Gurley, Troy, N. Y.

Municipal Uniforms

926. Municipalities who take pride in the appearance of their municipal staffs will be interested in receiving a leaflet from Reeves Brothers, Inc., 54 Worth St., New York City. Reeves materials for shirts and uniforms passes U. S. Government tests for strength, endurance, and color-fastness.

Deodorizing Crystals

927. The C. B. Dolge Co., Westport, Conn., will send you information on the Deodoroma crystals to be sprinkled about lavatories, garbage pails, and other locations where there are foul odors.

(*Continued on page* 18)

SMITH
TAPPING SLEEVES

MAKING PRESSURE CONNECTIONS
Without Stopping the Service

SMITH Tapping Sleeves for making pressure connections to A. W. W. A. standard mains, classes A, B and C, and for pressures up to 150 lbs. per square inch, are made in four types, here illustrated. At top: 1. Clamped Sleeve Joint; 2. Bolted Sleeve Joint. Bottom row: 3. Bolted Sleeve Joint with flanged end joint valve connection; 4. Hackensack Sleeve Joint with flanged end joint valve connection.

A. P. SMITH
TAPPING
SLEEVES

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THE A. P. SMITH MFG. CO. EAST ORANGE NEW JERSEY

WHICH OF THE CATALOGS WOULD YOU LIKE?

(Continued from page 17)

Water and Sewage Treatment Plants

928. Here is a comprehensive booklet covering equipment for water and sewage-treatment plants. Catalog 703 discusses in detail the self-cleaning bar screens, screening grinders, grit washers, conveyor type sludge collectors, primary and secondary settling tanks, scum removers, sludge elevators, and chemical feeders manufactured by The Jeffrey Manufacturing Co., 970-99 North Fourth Street, Columbus, Ohio.

Temperature Recorders for Steam Power Plants

929. The new bulletin entitled, "Temperature Instruments for the Steam Power Plant," published by Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Pa., will be of valuable assistance to operators in measuring the temperature of steam, feed water, and cooling water; and also in the control of fuel, combustion air, and flue gas. The catalog contains a simple description of the principles of the thermocouple, potentiometer, and other fundamentals of the instruments involved. When writing for your copy ask for catalog N-33-163.

Bid Good-Bye to the Bell-Holes

930. Introduce yourself to an easier way of joining cast-iron mains by writing for literature from The Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa. This jointing compound is easy to use and produces a joint that actually improves with age.

How to Dodge Pump Clogging Trouble

931. If you foresee danger of clogging or breakage when pumping water of sewage, here is a bulletin that may give you some help. The Morris Machine Works, Baldwinsville, N. Y., will tell you about the resourcefully engineered Axiflow screw pumps, especially designed to overcome this difficulty.

Pipe Couplings

932. Bulletin 37-E issued by the Victaulic Company of America, 26 Broadway, N. Y., describes how its pipe coupling works, either in straight-line or flexible pipe-line installations. It also tells how it can be used either for an expansion joint, a union, or a locked joint preventing pull-out under pressure, vibration, or sag.

Iron-Cased Water Meters

933. Bulletin No. W-535 issued by Pittsburgh Equitable Meter Co., Pittsburgh, Pa., discusses the Ironside water meter, built along lines that conform to wartime limitations yet retaining all the qualities of the old meter. This booklet covers the construction features of the meter itself and its molded glass register box, and tells of the other operation details.

Diesel Engines

934. Bulletin 106 of the Nordberg Mfg. Co., Milwaukee, Wis., gives you the story on their gas-burning diesels. Of chief importance is the fact that they may be operated on either oil or natural gas without any change of pistons, heads, cylinders, or other major parts. This pamphlet discusses the principles of operation of this diesel and its advantages. Also included is performance data from an actual installation.

How to Use Clay Pipe

935. You are going to need the important new bulletin isued by the Clay Sewer Pipe Assn., Flannery Building, Pittsburgh, Pa., to help you plan the use of this pipe to conform with WPB order L-316. To meet critical manpower shortages, WPB has issued these limitation orders regulating clay pipe dimensions. This folder schedules the pipe sizes and fittings that now are available.

Garbage and Refuse Incinerator

936. Officials in charge of garbage and refuse disposal will be interested in Bulletin No. 212, issued by Nichols Engineering & Research Corporation, 60 Wall Tower, New York 5, N. Y., describing the Monohearth. This literature discusses the design and operation of this new method of garbage and refuse incineration, which utilizes a revolving cone with stoking arms constructed to spread the mass of refuse and allow preheated air to mix with the combustible material. The bulletin also brings to your attention the many special features and savings effected by this equipment.

Air Compressors

937. Schramm, Inc., West Chester, Pa., has published form AED 43-10M on its complete line of air compressors—portable and stationary. This pamphlet describes and illustrates the details of the various models available, and the feature of each. Also included are compressor and engine specifications.

Keep Sewers Working

938. Sewerage officials may find literature published by the Expanding Sewer Machine Co., 108 East Walnut St., Nappanee, Ind., the answer to some of their problems. This discusses in detail the firm's complete line of sewer cleaning equipment and root cutters that will keep your sewers flowing at their fully designed capacity.

(Continued on page 21)

WHICH OF THE CATALOGS WOULD YOU LIKE?

(Continued from page 18)

Deep Well Pumps

939. Improved methods of pumping water from deep wells are described in a new pump bulletin just issued by the Peerless Pump Division, Food Machinery Corp., 301 West Avenue 26, Los Angeles 31, Calif. Two basic methods of raising water are illustrated—turbine and hypocycloidal. The difference between oil and water lubrication is also shown. Interesting cross-sectional views of deep well pumps, revealing the shafting and submerged pump elements, graphically demonstrate the operation of lifting water from any depth. Various types of pump heads are included, to illustrate application of power, for direct motor connection, belted drives, geared power and combinations of these. Ask for Bulletin 141A.

Sprinkling and Flushing Hydrant

940. Do you know about the Mueller sprinkling and flushing hydrant? Learn how it eliminates the necessity of taking up valuable space with hose connections. Its construction makes it particularly valuable for installation in sidewalks, golf courses, airports, and parks. Write the Mueller Co., Decatur 3, Ill., for further data.

Equip Your Trucks with a Hydraulic Tailgate

941. Any municipality utilizing trucks will be interested in the "Tailgate Loader" manufactured by the Anthony Co., Inc., Streator, Ill. Literature on this equipment describes how easily it can be attached to existing equipment and how simple it makes the task of loading and unloading equipment from the trucks. Loads are lifted to the truck body or lowered to the ground by powerfully hydraulic hoist mechanism controlled by one lever.

Sewage Treatment Process

942. Bulletin 112 issued by the Lakeside Engineering Corp., 222 W. Adams St., Chicago 6, Ill., contains some interesting design data on aero-filter equipment. This includes a discussion of the single stage treatment and the multiple stage treatment and tells under what circumstances they may be used. Many other recommendations are included on such important items as filter depths, recirculation, sewage pumps, and pump control. Diagrams show the operation of the single-stage and two-stage aero-filters.

Fibre for Brushes

943. The Otto Gerdau Co., 533 Canal St., New York 13, N. Y., will send you samples and quotations on the various types of fibre it has available to be used in mechanical street sweeping equipment. To use less fibre, the company states, use fresh fibre. African Bass, Indian Palmyrah stalks, mountain hickory and steel wire are listed by this firm.

Insurance Designed for the Municipality

944. The Engineering Department of The Home Fleet of Insurance Companies, 59 Maiden Lane 7, N. Y., has assisted many municipalities in preparing and maintaining constructive insurance programs. They will assist you in building a scientific insurance program that will protect the community and the citizen.

Threaded Joints

945. McWane Cast Iron Pipe Co., Birmingham 2, Ala., will supply you with data on the advantages and workings of its cast iron pipe with threaded joint. It points out that the ease with which they may be joined together—merely by screwing the two pieces together—makes it attractive during these days of manpower shortage because it can be done by unskilled labor.

What Makes Good Water Meter Practice

946. "An Outline of Water Meter Practice" is being offered by the Neptune Meter Co., 50 West 50th St., New York 20, N. Y. This interesting book covers this topic in complete detail under the headings: types of meters and their characteristics; testing and repair shops; testing of water meters; test standards; meter repair methods; length of service; selection of the proper type and size of meter; field testing and maintenance methods; meter reading and the meter scrutinizer; metallurgy and meters.

Street Lighting Fundamentals

947. Line Material Co., 802 N. 8th St., Milwaukee, Wis., is publishing a series of bulletins covering topics of street lighting fundamentals. The first of this series is entitled, "Development of Modern Street Lighting," and traces the history of street lighting and includes definitions of illumination terms. Officials interested in this series may secure this first bulletin plus an attractive binder to hold the entire set.

Diaphragm Sludge Pump

948. In handling sludges in either water- or sewage-treatment plants, you should know what the Oliver Diaphragm Slurry Pump can do. Actuated either by air pressure or vacuum, it transfers the sludge evenly and does not require motor, stuffing box, packing or high speed moving parts. Valves and diaphragm are resistant to corrosion and abrasion. Write to Oliver United Filters, Inc., 33 West 42nd St., New York 18, N. Y. and ask for bulletin 307-R.

(Continued on page 22)

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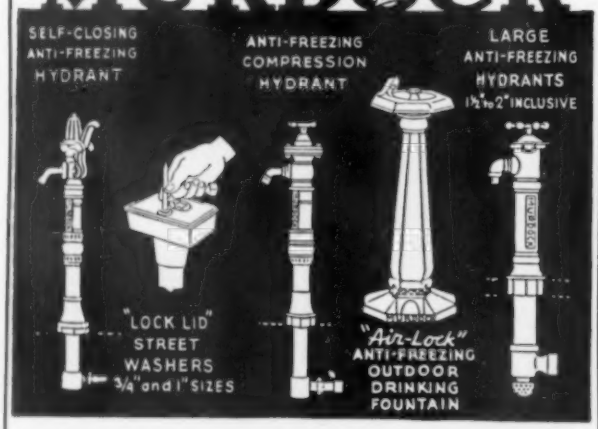
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WHICH OF THE CATALOGS WOULD YOU LIKE?

(*Continued from page 21*)

Water- and Sewage-Treatment Equipment

949. Offered in a single bound booklet by Infilco, Inc., 325 West 25th Pl., Chicago 16, Ill., is the entire series of catalogs and literature published by this company, covering water and sewage treatment equipment. This series will be especially valuable both to the engineer and the operator interested in the actual design and operation of his plant, and also to municipal officials wishing to keep abreast of latest developments in water purification and sewage disposal.

How to Make Airport Runways Skidproof

950. "Ice Control for Airport Runways," is a new information sheet issued by the Calcium Chloride Assn., 4145 Penobscot Bldg., Detroit 26, Mich. It gives methods and details covering the use of chlorides alone or combined with an abrasive. It also gives comparative figures covering braker performance on icy surfaces which should be particularly helpful.

New Caterpillar War Book

951. "Cavalcade of Fighting Horsepower," a new 16-page booklet published by Caterpillar Tractor Co., Peoria, Ill., gives a graphic portrayal of the part "Caterpillar" products are playing in World War II. Important chores on many fronts—including the Aleutians, Africa, Arctic, New Guinea, Great Britain, Mediterranean, and New Caledonia—are pictured and described. For a free copy request Form D324.

Lightweight Fire Hose Gives Sturdy Service

952. You don't need a 10-ton truck to carry a few lengths of fire hose made by the Bi-Lateral Fire Hose Co., 20 N. Wacker Drive, Chicago. Literature by this company explains the light-weight features of the hose and its ease of handling.

Use This Service Pipe with Confidence

953. Service pipe is always important, and there is one that is low on critical materials, and that you will be specifying and using long after the war. The resourcefully constructed and interesting Tube-Loy pipe and Grinnel Superseal Flared Fittings are carefully discussed in literature furnished by the American Smelting and Refining Co., Lead Products Division, 120 Broadway, New York 5, N. Y.

Making a Gate Valve Distinctive

954. If you write for descriptive literature from the Eddy Valve Co., Waterford, N. Y., you will learn what makes a gate valve distinctive. Outstanding is the feature of allowing the gate to revolve freely on the trunnions, thereby preventing it from always seating in the same position. The Eddy catalog describes this as well as the well-known Eddy Hydrant.

Ground Thawing Equipment

955. Winter construction work on roads, streets, and airports may be simplified by the use of the Aeroil No. 98 portable steam thawer. Winter Catalog No. 234A published by the Aeroil Burner Co., Inc., West New York, N. J., discusses this equipment that will thaw culverts. Information is also included on concrete heaters, portable coil water heaters, and thawing torches.

Winter Protection for Water Meters

956. Water-works officials will be interested in the Meter Mittens of the Ford Meter Box Co., Wabash, Ind. Literature being offered by the company describes how easily and quickly they can be installed and just how they insulate your meter to prevent it freezing.

Gas Engines

957. Officials in charge of municipal power plants will want Bulletin S-550-B21 published by Worthington Pump and Machinery Corp., Harrison, N. J. Here is information on their CCG Gas Engines giving specifications for the various parts. Photographs show typical installations in plants throughout the country.

Centrifugal Pumps

958. Sewage-plant operators will find of interest Bulletin A-304 of the Gardner-Denver Co., Quincy, Ill. This deals with their centrifugal sewage and waste disposal pumps. It discusses in detail and by means of photographs the various parts of the pumps, and gives typical specification of the various types of these pumps and information on actual installations.

Making Emergency Repairs

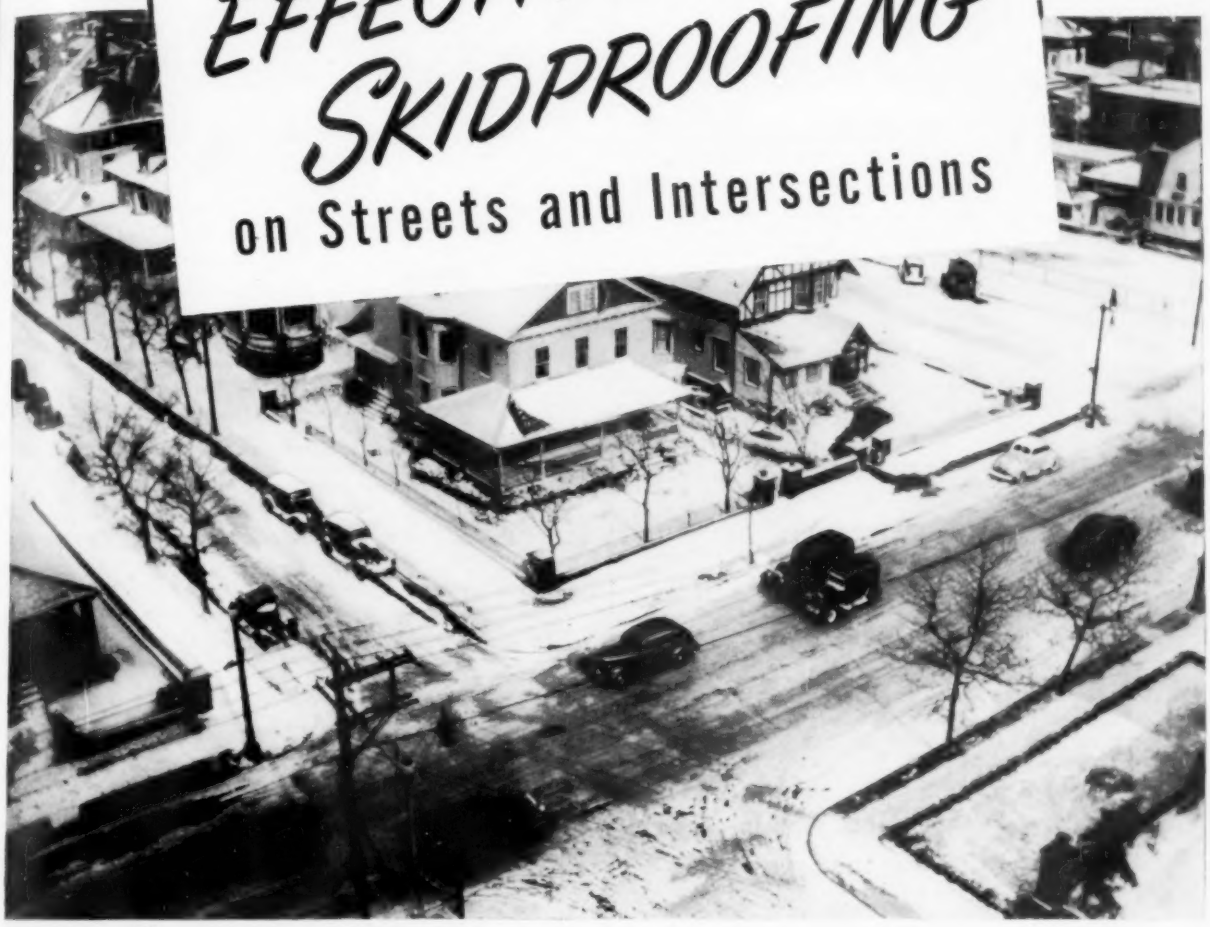
959. The Doublex Simplex Split Sleeve manufactured by the American Cast Iron Pipe Co., Birmingham 2, Ala., may be the answer to your war-induced manpower and material shortage. This equipment will enable you to repair emergency breaks in pipe lines quickly, economically, and with unskilled labor. Write this company for printed matter on this sleeve.

Spreader for Street Construction and Maintenance

960. The Flink Co., Streator, Ill., will furnish you with literature on their spreader for use in street maintenance work. This fits standard size dump trucks and is operated by the driver of truck, thus affording minimum of labor. Spreads all granular material up to 1 inch wet or dry, forward or backward.

(*Continued on page 24*)

EFFECTIVE SKIDPROOFING
on Streets and Intersections



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WHICH OF THE CATALOGS WOULD YOU LIKE?

(Continued from page 22)

Snow Loaders

961. George Haiss Mfg. Co., Inc., 140th St. and Park Ave., New York 51, N. Y., will send you a copy of the "Haiss Snow Loader Bulletin." Officials in charge of streets and airports will be interested in the way the Haiss snow loader can be used on wet, soggy snow or hard-frozen snowpiles. Mechanical and operating data on this equipment also is listed.

Arrest Rust

962. Details are available from the Rusta Restor Division of The Johnston & Jennings Co., 861 Addison Road, Cleveland 14, Ohio, on their cathodic electric corrosion control method which provides permanent protection against rusting of water tanks, piping, and steel structures. This literature describes the principle of this method and the way it will serve your community by preventing corrosion and deterioration.

Check Valves

963. Water-works officials may save themselves a great deal of trouble by looking into the data being offered by Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa., on its check, single acting, altitude valve. This valve automatically maintains a uniform water level within 3- to 12-inch variation, and prevents loss or return of storage water back through the valve. The company invites you to write for specifications.

Buried Pipe Finder

964. The varied abilities of the M-Scope—the buried pipe and cable finder manufactured by Fisher Research Laboratory, 1961-63-65 University Ave., Palo Alto, Calif.—will make it indispensable in any water-works department. Literature is available on this equipment that locates the exact position of underground pipe lines, pipe bends, dead ends, valves, stubs, service connections, covered manholes, and obstructions in sewers.

High Pressure Water for Fire Fighting

965. Fire-fighting officials will find of much interest Bulletin No. FB 3-43-5000 issued by the John Bean Mfg. Co., Division Food Machinery Corp., 756 Hazel St., Lansing 4, Mich. This discusses the use of high-pressure water for fire fighting—its value, what high pressure is, pump and tank capacity available, and types of fire guns. Also discussed are various types of fire and the application of fog in their control.

Warning Signals

966. Bulletin 29 published by Foster Engineering Co., 133 Monroe St., Newark 1, N. J., will give you all the necessary information you may desire on warning signals. This illustrated folder gives you all the details of the Foster Sirens and how they will suit your requirements. These can be used to supplement your existing signal equipment.

Make Photo-Exact Copies Easily

967. Literature furnished by the American Photocopy Equipment Co., 2849 N. Clark St., Dept. EB-12, Chicago 14, Ill., explains how the handy little A-PE-CO photo copy machine works. It will make a copy of anything printed, written, or drawn—and do the job quickly with a minimum of bother or inconvenience.

Fire Hydrants You Can Repair Quickly

968. Any water-works official knows the value of a fire hydrant that can be repaired quickly, and here is one that fills the bill. Literature from The A. P. Smith Mfg. Co., East Orange, N. J., tells how the Smith Protectop hydrant is especially designed so that it will break only in one place if an accident occurs, thereby requiring only minor repairs to put it back into good working condition.

Keep Water Mains Clean

969. How well is your water distribution system carrying its wartime load? Before requesting extensions, write to The National Water Main Cleaning Co., 30 Church St., New York 7, N. Y., for literature showing how to increase the capacity of your distribution system without using vitally-needed material.

Eliminating Pump Clogging

970. Folder 32 of the Sewage Equipment Division, Chicago Pump Co., 2300 Wolfram St., Chicago 18, Ill., deals briefly with Flush-Kleens and the Comminutors, and their interesting method of ending the clogging of sewage pumps. This bulletin shows how both pieces of equipment work. The Flush-Kleens cannot clog because material does not reach the impellers; the Comminutors are installed ahead of sewage pumps and cut up coarse sewage matter.

Cold Lime-Soda Water Softener

971. Bulletin 2384 isued by The Permutit Co., Dept. G3, 330 West 42nd St., New York 18, N. Y., will be of especial interest to water-works men. It describes the Spiractor, Permutit's new cold lime-soda water softener. This includes design and operating principles of this process which produces a clear soft water with no settling and no sludge. Diagrams show the flow and a typical arrangement of the equipment.

Vol. LVII, No. 12 The American City December, 1943

Highlights from a $100,000 Report

ON November 10, Robert Moses and associated engineers and attorneys of New York submitted their widely heralded report on "Portland Improvement," for which a fee of $100,000 had been underwritten jointly by the City of Portland, Ore., the County of Multnomah, School District No. 1 of Multnomah County, the Port of Portland, and the Commission of Public Docks.

This handsomely printed document contains a 10-page Director's Report, without pictures, and a Consultants' Report of 72 pages, with many New York and Portland photographs and plans. Most of the advice offered is, of course, primarily of local importance, but Commissioner Moses' philosophy as to post-war urban redevelopment has nation-wide interest for municipal officials and city planners.

$60,000,000 Construction Program

Here are significant paragraphs:

"We have no right to assume that there will be full employment in and around Portland immediately after the war, that is employment at high wages sufficient to take care of all the present 137,000 war workers, as well as those discharged from the armed forces. We must assume that there will be a slump, and that at least a large percentage of war workers must retire voluntarily or be laid off. . . .

"We have found that a $60,000,000 construction program, employing a varying number up to 20,000 for two years, represents all that the area can afford, all that is necessary and justifiable, and as much as in any event could be completed in this time. $15,000,000 will be required for land for this $60,000,000 construction program, thus raising the grand total to $75,000,000.

"Among ivory-tower planners who will accept nothing short of a revolution in urban life, this report is bound to be disappointing because, in accordance with our instructions, we are recommending only limited public improvements in the urgent class which this community, with help from the state and federal governments, can afford to compress and expedite in order to help meet the postwar emergency. . . .

Sequence of Projects

"As a matter of fact, there is no reason to aim at employing 20,000 people all at once on the day after the war ends. The war may end gradually. There will be more pressure for military than for industrial demobilization. There is every indication that the federal authorities, who have studied this matter, understand the dangers of too rapid demobilization and, if anything, will advise that the process be too slow rather than too swift. The best public works program is, therefore, one which begins with rather small projects requiring a good deal of manual labor and comparatively little skilled labor, equipment, and material; which follows with large construction projects requiring time for fabrication, and delivery of material and heavy equipment, and the selection of skilled or semi-skilled men; and which has in reserve flexible projects

A GRAPHIC PRESENTATION OF A NATION-WIDE PROBLEM
What is to happen to migrant war workers when victory is won?

which can meet emergency unemployment problems. Graphs indicating the curve of employment on public works in the two-year period following the end of war, appear in the consultants' report, along with details of the program which we recommend. . . .

Sounder and Stricter Zoning

"These and other conspicuously needed improvements will all fall short of success unless Portland adopts much sounder and stricter zoning regulations. Present regulations are inadequate and their administration ineffective. It is astonishing that a community so progressive in other respects should allow the unregulated mixture of all sorts of commercial, industrial, residential, and recreational uses; and should permit one kind of use to harm and often destroy another. The time for academic debates about the merits of zoning is over. The constitutional aspects of the problems are fairly well settled, and the tendency of courts is to be more and more liberal in upholding even the most stringent zoning regulations on the basis of police power or otherwise. The whole subject is far beyond the stage of experiment, and there are enough precedents all over the country to serve as a guide. It is not too much to say that an adequate zoning system is one of the tests of community vision, cooperation, and civic consciousness. . . .

Sources of Funds

"As to sources of post-war construction funds, it is impossible to anticipate precisely what will happen, but some assumptions based on depression experience must be made. It seems likely that in this and other communities, federal subventions, grants, or contributions, of as much as 50 per cent will be made available—somewhat more than the public works grants of the depression period, but less than the federal contribution to work relief. Based on highway experience we see no reason to fear federal dictation because of the matching of funds. To what extent states, as distinguished from municipalities, will be called on to contribute is a matter of useless speculation until the federal attitude is more clearly defined. . .

"It is apparent that design funds for somewhat more than half of the entire $60,000,000 construction program are presently available, that is for the state highway and sewer work. About $800,000 will be required immediately for the preparation of detailed specifications for the rest of the program. We recommend that bonds be authorized in this amount at the earliest possible date. . . .

The Land Problem

"Purchases and condemnation of land cannot wait until the war is over if construction is to start without delay. It is natural, on the other hand, for conservative citizens and taxpayers to be skeptical about vesting title now in land not actually needed until later on. The tendency therefore is to postpone this unpleasant subject and leave it in abeyance until it is too late to do anything about it. This is one of the surest ways of scuttling a public works program. . . .

Other Problems

"The shelf or reservoir of complete plans and specifications does not end the problem for the duration. The projects must be broken down into men, material and equipment so as to find out what work can actually be started, how long it will last, how many it will employ, and what effect it will have elsewhere. It is, after all, the effect on employment and pump-priming in other communities which justifies the federal and state contributions without which any major municipal program is destined for failure.

"There are other problems which must be worked out in advance. The question of how many contractors are available must be discussed. Soldier preference must be figured out. Someone must decide what part of the work is to be done by hire of men and equipment rather than contract in order to insure sufficient flexibility. There must also be a consideration of state highway and other projects in the open country within commuting distance from Portland. . . .

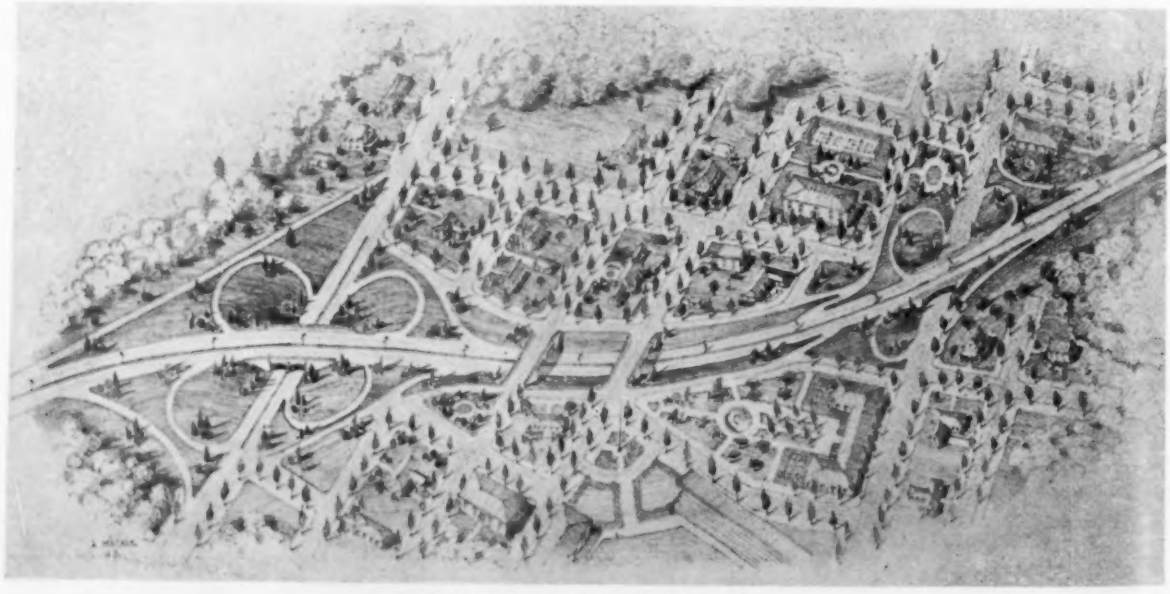
The Alternative

"If such a genuine works program does not materialize or proves inadequate, Portland and other congested war areas must face the threat, or perhaps implication would be a less invidious word, that the long arm of the federal government will reach out from Washington and supply by one means or another the employment which the state and its municipalities seem unable or unwilling to provide.

"Make no mistake about it. This alternative is just straight work relief with home relief for those who can't work at all, in a volume and with a concentration never attempted before even in the depth of the depression, together with a tremendous expansion of social security, especially unemployment insurance and large bonuses for veterans. It is hardly necessary to say that every sane person wants to avoid a repetition of the relief system which began with the CWA in the fall of 1933 and lasted in one manifestation or another and under various alphabetical agencies for the better part of seven years. This is not to say that no worthwhile construction came out of work relief or that it was not immeasurably better than a dole or handout. It is, as a matter of fact, astonishing how much was accomplished in the areas of better relief administration, but the best of them were nothing to boast of and certainly nothing to drift into again through the same sequence of tragic indifference, hectic improvising of miscellaneous projects, and boon-doggling, leaf raking, and desert projects where all else failed.

Action Needed

"This program is not self-executing. We recommend that each of the bodies which ordered this report designate a representative to serve on a committee to analyze this report, determine on a program, find ways and means of financing



Typical treatment of foothill throughway

it as suggested by us or otherwise, expedite plans, schedule work, and generally see to it that the program is carried out. This committee should also cooperate with another committee of representative citizens appointed by the Mayor to canvass realistically every prospect of local business stimulation."

EDITORIAL NOTE—The construction program is discussed in the Consultants' Report section of "Portland Improvement." Included are an arterial highway and bridge program, estimated to cost $20,000,000 for construction and $10,000,000 for land; major municipal improvements costing $20,000,000 for construction (about half of which is for a sewage-disposal and treatment system), and $1,500,000 for land; other municipal improvements "by small contract and hire and labor," estimated at $12,000,000 for construction and $3,500,000 for land; and major projects within commuting distance of Portland having a "work benefit to Portland," of $8,000,000.

The report is signed by Robert Moses, as director; Madigan-Hyland, W. Earle Andrews, Gilmore D. Clarke, and Waddell & Hardesty, as consulting engineers; and Lewis L. Delafield, Jr., as attorney. Special consultants also listed as having been associated with the consulting engineers in the work are:

J. J. Darcy, District Engineer, New York State Department of Public Works

James F. Evans, Director of State Parks, New York State Department of Conservation

John C. Evans, Chief Engineer, Port of New York Authority

Arthur E. Howland, Chief Engineer, Long Island State Park Commission

Sidney M. Shapiro, Deputy Chief Engineer, Long Island State Park Commission

George E. Spargo, Executive Officer, New York City Department of Parks

Henry A. Strecker, New York State Department of Public Works

Harry Taylor, Assistant General Manager, Triborough Bridge Authority

Clinton F. Loyd, staff chief of the technicians of the engineering organizations

Chester R. Blakelock, executive secretary to both the engineering and legal consultants

Editorial Comment

THE $100,000 fee charged for the "Portland Improvement" study and report has been widely criticized. As to whether the payment is greater than justified by the skill, time, and incidental expenses devoted to the work, THE AMERICAN CITY has no opinion to express. But this substantial sum having been paid for a general report and recommendations for a post-war program, we guess that the public agencies of Portland and Multnomah County will give the document much more consideration than is usually accorded to a less costly study.

It is certain that even the large and able group of New York consultants and attorneys who cooperated with Commissioner Moses could not have produced in two or three months' time the report here discussed unless a local "shelf" of public works had already been partially prepared. Indeed, as director of the study, Mr. Moses says frankly:

"As to these recommendations, many cover ground already broken by competent local public officials, engineers, and technicians. We have reviewed these projects, not invented them. Here and there we have suggested changes. If occasionally we have found it necessary to be critical, it will be seen that this has occurred rarely and that we have found much more to praise than to take exception to."

Portland's bold experiment in post-war planning brings into discussion again a problem which is puzzling many municipal officials and planning commissions—the problem of "master planning" as contrasted with an uncoordinated "shelf" of post-war public works.

It may be that Commissioner Moses' scorn of the "ivory-tower planners who will accept nothing short of a revolution in urban life" is causing him to sympathize too little with the sincere efforts of many practical men to abolish the "hit or miss" method of urban development. On the other hand, as against the perfectionist attitude that would have cities postpone all post-war project design pending the completion and adopting of a master plan, THE AMERICAN CITY urges what we believe to be a more rational course:

This is that during the remaining months or years of the war, the preparation of master plans proceed speedily and simultaneously with the design of individual projects for sites tentatively selected. If the war should end before the master planning is completed, construction might start on projects whose sites, according to the best judgment then available, would be most likely to fit into the master plan. On the other hand, if the completion of the master plan antedates the victorious end of hostilities, it would be wiser to scrap or modify some of the individual project plans than to build public works or buildings out of harmony with the city's rational development.

A similar point of view as to post-war planning procedure for local units of government has been expressed by Russell Van Nest Black, consultant to the New Jersey State Planning Board. Discussing local and state cooperation in post-war planning, before the New Jersey Federation of Official Planning Boards on November 18, Mr. Black said:

"To create a large reservoir of ready-to-go useful works reserve and to assure a high standard of post-war public improvements and community development are responsibilities of all government. . . .

"If allowed to develop our own routine in our own good time, we would insist that every project (local and state) going into this reserve be first tested respectively against what we know as over-all or master municipal, county, and state plans. . . . The end of this part of the show [the war's end] may be closer than we think, and the pace is picking up. Some engineers and architects must be assigned now to making construction plans and specifications for a fair number of more obviously needed improvements, without waiting for completion of master plans. The rest of the available planners should hurry on with the master plan routine, hoping that their plans may yet be completed in time for adjusting project priorities, and knowing that if their master plans cannot be in full action precisely at the end of the war, there will be plenty of need and use for them with the unfolding post-war years."

Elsewhere in this issue Commissioner Moses presents some of the features of New York City's present "shelf" of post-war public works, estimated to cost some $700,000,000, and lists in detail $115,093,545 of Park Department projects for which he has the major responsibility. THE AMERICAN CITY shares the regret of many of New York's civic leaders that the local City Planning Commission has not yet succeeded in carrying out its charter mandate of 1938 to prepare a master plan of the city. We believe that every effort should be made to push this task forward during what the London planners have called the "pause" in their city's development. It may be assumed that the New York City Park Department's projects fit into what might be designated as a master plan of park development. But does anyone know how well that phase of city building will mesh into the as yet unfinished master plan of land use for all urban purposes?*

Let our cities by all means prepare definite blueprints for post-war projects, lest, as Charles E. Merriam has expressed it, they be caught napping and many municipal Pearl Harbors result when demobilization starts. While there is still time, let us fit the preparations for our coming battle against post-victory reaction into the strategy of a well-planned campaign for rational urban redevelopment.

* City-wide master plans of sewage-treatment plant sites, of major streets and express highways, of health center districts, and of clearance areas have been separately formulated and adopted by the City Planning Commission; but there has been no adotpion as yet of a master plan of land use nor of such other important elements in a city-wide master plan as rapid transit facilities, rail and air terminals, public markets, or future sites for high schools and planning fields.

How to Turn Brickbats into Bouquets

By J. W. MORGAN
Commissioner of Public Improvements
Birmingham, Ala.

All complaints to the Birmingham Department of Public Improvements are handled directly by the Commissioner's office. Calls are entered in duplicate on permanent cards and forwarded to the respective superintendent. After conditions have been corrected, the Commissioner writes a personal letter to the complainant. This system not only builds goodwill for the city, but also separates justifiable requests from those made by "chronic kickers" with written records whose validity has been recognized by the courts.

WHEN a citizen calls us with a justified complaint, he has a right as a taxpayer to expect service; but when we write him a letter telling him the matter has been corrected and inviting him to "call again" he often is all but flabbergasted. Always he is pleased.

An airtight system of handling calls and complaints involving our street, garbage, sewage, and incinerator services, makes it possible for us to write the citizen such a letter and mean it. My office, equipped with three telephones, acts as a central clearing house for all these calls and our record system is such that each job is followed through until its completion.

Replace "Pocket" System

This system was put into effect some five years ago, and since that time we have handled more than 25,000 calls, on all of which we have a permanent record. This replaces what I call a "pocket" system, whereby no permanent record was made of calls and callers were probably shunted around from one department or subordinate to the other. We take all calls here and apportion them out to the proper departments.

Our system is quite simple and briefly is as follows: Each call is entered in duplicate on a complaint card, giving the full name of the citizen, the address, the date received, and the time of day. Nature of the complaint is also described fully. One copy of the complaint stays in the central office, and the other is dispatched to the superintendent of the respective department whether street, garbage, sewer, or incinerator.

Ordinarily, the superintendent dispatches the complaint card directly to the foreman who does the work. When he makes his report showing what was actually done, the superintendent inspects the job, records his report, and returns the card to the office.

Immediate Investigation

In practice some of the calls go out to the superintendent or his crews by telephone and often are handled the same day or the next day. The city has several floating gangs whose jobs is to catch emergency work such as sewer stop-ups. They call in every few hours. The incinerator crews, among other things, remove dead animals from the streets and thousands of such calls come in annually.

When a job has been completed, the superintendent takes his complaint card and enters a notation to that effect on the back, noting the date the work was done, and then signing his name. Often this card never goes out of the central office, as the superintendent gets the call by telephone and then makes out his report on his next regular call at headquarters.

It is after the superintendent has reported the work done that a letter is dispatched to the citizen, so advising him and inviting him "to call us at any time in the future our services might be needed." The complaint card as completed by the superintendent is then placed in our permanent file. The other record of the call which was held in our office, more or less for record pending completion of service, is destroyed.

Locate the "Chronic Kickers"

In addition to keeping a record of each job, we also keep what we call a master record on each citizen who makes more than one complaint. This enables us to easily spot the chronic kickers and complainers, of whom there are a few in any city. Recently

COMPLAINT No 2402

STREET AND GARBAGE DEPARTMENT

Mrs. John Doe — 420 East Park Street

9/10/43 — 10:30 — Matlock

Alley in the rear needs to be cleaned, gutter ditched. Advised will badly washed in the center.

SUPERINTENDENT'S RECORD AND REPORT

DATE RECEIVED 9/10/43 TIME 11:30

Moved two loads of brush, opened gutter lines, graded and surfaced alley with slag.

DATE COMPLETED 9/11/43 SUPERINTENDENT

COMMISSION OF THE CITY OF BIRMINGHAM J. W. MORGAN

September 12, 1943.

Mrs. John Doe,
420 East Park Street,
Birmingham, Alabama.

Dear Mrs. Doe:

Thank you for reporting the condition of your alley to us on September 10.

The Street Department removed two loads of brush, opened the gutter lines to facilitate drainage, graded and surfaced the alley with slag.

Your interest in calling our attention to things of this nature is appreciated very much, and we ask you to call us any time our services are needed.

Yours very truly,

J. W. Morgan.

Here is the story back of Birmingham's smoothly operating system which takes care of complaints. One side of the card records the citizen's request, the other shows what was done, and finally a personal letter of thanks goes out signed by the Commissioner.

we had such a person sue the city. We were able to show in court by our records that she was a chronic kicker. As a result she got nowhere with her suit. All our records are such as will stand up in court.

Advantages

But the over-all advantages of our system are as follows: It gets the work done, it gets it done right, and it gets it done quickly. Above all, the customer is pleased! And, it is easier for our city staff to do things in a systematic way. For one thing, such an airtight system eliminates duplicate calls and also such worrisome details as getting the wrong address. The person who takes the complaints over the telephone needs to be thoroughly familiar with the city and with the set-up of the various departments.

Occasionally we get a letter from a citizen saying he never expected to get a letter of thanks for making a complaint. I think the result is a better civic spirit throughout the city. As a matter of fact, the number of calls has dropped off considerably. However, I attribute some of this to the fact that people are so busy with the war effort that they don't have time to complain, or else do not notice little things that they might otherwise report to us.

Basically, all we do is try to convince our people that their municipal government is working "with" them instead of "against" them.

Cleveland Vetoes Purchase of Electric Service Co.

THE Cleveland City Council Committee, after a three months' discussion which at times became hot and bitter, recently voted 6 to 3 against the purchase of the Cleveland Electric Illuminating property, the privately owned electric system.

Cleveland already owns a municipal system which serves a limited portion of the city, or about 55,000 customers, and includes street lighting. Its municipal system has served as a regulating plant for 30 years and was the first in any large city to establish a three cent rate for electricity. The revenue from the municipal plant in 1942 was slightly more than $4,000,000. Cleveland is the largest city in the country operating a competing lighting system.

The chief argument against acquiring the private lighting system was that complications would arise if the city were to serve outside users. Over half the business of the private company comes from customers beyond the city limits.

Facts You Can Understand About Electronics

And Their Relation to the Municipal Field

TECHNICALLY speaking, electronics concern the useful work performed by electrons working in space. This is in contrast to the work they do in solid matter such as copper, aluminum, or steel. Getting down to cases, it is nothing more or less than the old vacuum tube that has learned a few new jobs.

* * *

The science of electronics is scarcely a new science, waiting to be introduced in some post-war period. Excluding radio and Radar, the colorful and highly effective "secret weapon" of this war, there has been approximately $500,000,000 worth of electronics business during the last three years, which is enough to command respect, even in these inflated days.

* * *

The work of the electronic tube falls into six general categories. It can rectify, changing current from alternating current to direct. It can amplify, catching, for example, faint radio signals heard from far distances. It can generate alternating current, producing frequencies up to the millions of cycles if necessary. It can control the flow of power, making it the function of any variable such as temperature, speed, or time. It can transform light into electric current, illustrated by the commonplace "electric eye." And it can transform current into light, illustrated by the X-ray tube, the fluorescent light, and many similiar examples.

* * *

Regarding the first of these abilities, that of rectifying current from A-C to D-C, this has already assumed importance where electric transportation is involved. It also has made possible the interesting dust-removal apparatus by which dust particles receive a positive electrical charge and then are deposited on negatively charged plates. Apparatus af this nature already has been used in sewage plants, such as New York's Bowery Bay plant, to cleanse the air used in the activated sludge process. It obviously could be used to advantage to remove smoke or dust particles, thereby helping cities clear up sooty downtown districts. From the public health viewpoint, there is also the help a device like this will give a hay-fever sufferer.

* * *

Concerning the second, amplification, any city with a two-way police radio station, is capitalizing on this ability. The control tower of every municipal airport is already thick with electronic apparatus. We can expect to see fire departments adopting the soldier's "walkie-talkie" to help in handling big blazes; and the same kind of equipment probably will be used by engineering departments, with the surveyor and his rodmen broadcasting their notes directly to a draftsman in the office who will plot them immediately.

* * *

The ability to generate alternating current, particularly the high-frequency variety, is chiefly a radio specialty. However, it has a special significance to the electric field in its ability to increase the load-carrying power of transmission lines as high as 50 per cent.

* * *

When it comes to control, an electronic circuit is the answer to every operator's dream. No longer is it necessary to limit motors to two or three speeds. Circuits can be designed to meet substantially any control requirement that can be specified. They can provide automatic, stepless regulation, with smooth acceleration between speeds.

* * *

The ability to transform light into current is one of those gingery subjects that must be handled carefully. As mentioned previously, it results in such interesting and mysterious products as the "electric eye" that automatically opens doors for you or unerringly counts people, buttons, sheep, autos, or anything else passing by at regular intervals. Occasionally some bright-eyed enthusiast puts one of these out of doors to automatically blow a horn or flash a light when a car or train is coming; and then on some foggy, misty day the unit sits there and squawks and blinks unconcernedly.

* * *

Transforming current into light produces, of course, such essential and already important products as the X-ray and the fluorescent lamp. However, there is another little tube that may or may not be municipally important. This circuit gives off ultra-violet rays in great quantities. With the bactericidal effect of these rays well known, the tube possibly will have an important influence in water and sewage treatment if the economic angle is favorable.

* * *

With this much data at hand, it can be seen that electronics already are working for the municipality and will continue to do so during the post-war period. The work is practical and well known to engineers. Electronics will not so much supplant old methods as develop new ones that will make the work more efficient and the service more complete.

Hindsight versus Foresight

By R. P. Day

Don't let 1939 thinking hobble you when studying how to re-equip your municipal department in the post-war period

LET'S move out in front to the the year 1950.

We are in the office of the Commissioner of Streets of a large city. The Commissioner is disturbed. In 1944 he used bad judgment in selecting machines and material for building new streets.

"I don't know what to think, Jim," the street foreman in District 1 is saying. "Automobiles and trucks are lighter than they were before the war, but traffic is so much heavier. The streets don't stand up the way they used to. Soft spots develop almost overnight. In just a few months our new streets are eating us up in repair costs."

"The answer, Dave," says the Commissioner ruefully, "is that hindsight is always better than foresight. In 1944, if we had taken the trouble to find out about better machines, better materials, and better methods of placing them, we wouldn't be having so many maintenance problems now."

"Take that new asphalt. If we'd kept up with the research of The Asphalt Institute, we'd have had good streets three years ago and saved expensive maintenance on what we've laid in that time."

Fortunately, the Commissioner's mistake can be avoided. In 1943, with the war reaching a peak in tempo and the post-war world on the mind of many international planners, it seems reasonable to believe that the Allies will soon be over the top of the hill, pushing down the other side toward total victory. Make no mistake, the battle is still tough, but planning for the future should be a part of winning it.

Despite the lack of new models for 1942-43, the industry has not been static—far from it. In the sands of northern Africa, in the jungles of Guadalcanal, and in the bleak, rocky wastes of the Aleutians, equipment has been tested on the hardest proving ground ever devised. Some machines were weak and they failed. Some parts were not heavy enough and they were strengthened. Some methods were unproductive of results and they were changed.

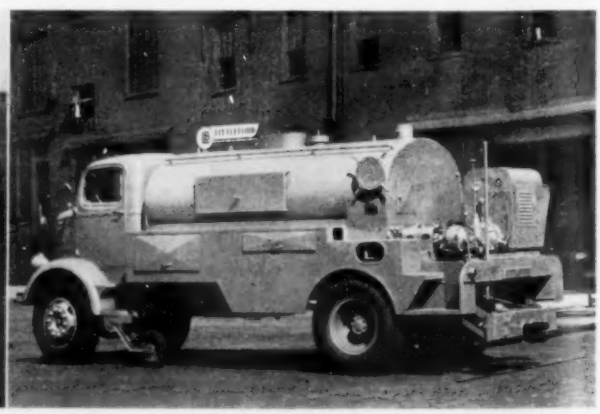
In a short time, many manufacturers will have available data, descriptions, and instructions for using these improved machines and products. Take the case of road and street construction equipment. In the short 4-year period from 1938 to 1942, road building was revised by such instruments as the sheepsfoot roller, the road mixer, soil-cement mixtures, mechanical aggregate spreaders, motor graders, and power loaders. In the next few years street commissioners will have to get acquainted with vastly improved models of these machines. But where will the engineer be who doesn't keep in touch with the picture?

A 1½-cubic-yard shovel will dig material cheaper, on an average, than a ½-yard machine if it can work steady. Still, the 1½-yard shovel is seldom the one to buy. For street maintenance, the ½-yard machine is better suited. It will dig hard material; load into trucks; interchange as a dragline, crane, or dragshovel for digging sewerage ditches; and walk anywhere on crawler treads. With a small trailer, it will finish more smaller jobs at lower general cost than the 1½-yard rig will do —for all its higher capacity. Hence, the purchase of the best small shovel, irrespective of its initial price, is sound.

Of all the people interested in any improvement or new machine, it is safe to say that the manufacturer knows the most about it. Improved machines and materials were created, in the good old American way, to meet a definite need. That is why they sell. The ones which meet that designed need become successful. The ones which fail are generally weeded out.

That is why it is now more important than ever to get acquainted with the improvements of the manufacturers that apply to our own street department; to study and evaluate them carefully; and to make plans for our future results to be high and costs low. These improvements will be advertised before very long, available to all. The really conservative man is the one who will listen to what the manufacturer says, select the machine or material which benefits him, and then use them wisely, as recommended.

In battle-scarred areas, such as shown in this Signal Corps photo, modern equipment is now being tested under conditions far more strenuous than those of peacetime.



Although such equipment has been drafted to work for Uncle Sam, new developments have been uncovered which will make it even more useful to municipalities after the war.

By Russell Riker, C. E.
Borough Engineer

Can Sewage Pumps Be Trusted?

R. V. C. WHITEHEAD, JR., PHOTOGRAPH

Eleven years of operation in the Princeton, N. J., sewage-treatment plant with one of the highest lifts in the state, gives convincing evidence that they can.

PRINCETON, N. J., played it safe some ten years ago, when she designed her new sewage-treatment plant and trunk sewer. It just about doubled the cost of the project to rule out this last possibility of trouble; nevertheless it was the only logical decision that could be made at the time. Here is how it happened.

In 1931 when the new plant and trunk system was first considered the chief question was, should a trunk line —13 miles long and costing about a half million dollars—be built around the town, or should a pumping station and 5-mile force line be constructed at a cost of around $200,000—thereby cutting the first cost to less than half, but adding an annual cost of operation of the pumps.

The pumps had to be acquired in any case. All the sewage had to be lifted at the treatment plant, so the pumping station in connection with the force line meant no increase in costs from that angle. Accordingly, from a dollar and cents standpoint the force line was the winner hands down.

Confidence in Pumps Questioned

However, there were other considerations. Even at this late date sewage pumps were not always dependable. Nearly all stations had by-passes that were used frequently, but none could be supplied to the proposed force-line pumping station. And to bolster the arguments for the long trunk sewer was the thought that it could serve future developments in the area. This seemed sound eleven years ago; however, developments have not substantiated this expectation.

The $200,000 factor of safety, as you can readily see, was required because of lack of faith in those pumps. Today non-clog type sewage pumps have had their tests and have come through splendidly. No one need hesitate a moment about the question of pump performances. There is no further need of limiting the loss of head between treatment-plant units, thereby decreasing their efficiency. And our main station at Princeton, where all the sewage from an area 16 miles square—including the University—is pumped, is an example.

How the Station Is Powered

Our pumping station, located at the low point in the system adjacent to the sewage-treatment plant, is powered by three motors—one 24-hp, one 50-hp, and one 125-hp. All are three phase 60-cycle 440 volts.

The motors are controlled by a six-panel G. E. switchboard. Each motor panel is equipped with an automatic starter and circuit breaker and a knife switch for manual operation, independent of the flat switches used for the operation of automatic switches. There is also located on the first floor of the pumping station, a gasoline-driven alternator of 125 kw generator connected to a 240 hp Buffalo gasoline engine. The generator is designed to furnish enough electricity to run the entire plant if the utility power fails. In the dry or pump well connected with the motors, are three Fairbanks, Morse vertical pumps of the non-clog sewage and trash type, with capacities of 1, 2 and 4½-mgd. The 4½-mgd pump is expensive to operate and therefore, used very little. It was installed in order to handle adequately the entire flow at peak loads and naturally this condition occurs infrequently. The two smaller pumps are designed against a head of 77 feet, the larger pump against a head of 100 feet. The maximum and minimum height of sewage in the wet well ranges from a back-head of 2½ feet to a suction head as low as 3 feet. The piping is so designed that larger pumps may be installed or the capacity of the existing pumps may be increased by a change in impellers. The speed of the 1 mgd is 1,750 rpm. and the shafting connecting this pump with the motor has two intermediate bearings; the other two pumps have a speed of 1,200 rpm and have only one intermediate bearing. Hand holes were especially constructed in the pumps for cleaning purposes, but we have never used them because the pumps have never clogged. The wet well contains a platform above the water-level with a bar screen, spaces between the bars being 1½ inches.

Tests of the pumps were very satisfactory, particularly in regard to the capacity. The 1-mgd delivered 1.2 mgd; the 2-mgd sent to 2.4; and the 4½ mgd produced a top figure of 6. There was some slight difficulty with cavitation at the start, but this was quickly overcome by the pump contractors.

Pump Loads

Here is what the pumps have had to do. The average flow during 1942, measured by a venturi on the discharge side, was 1.4 mgd and varied from 1 mgd to 3½ mgd. The hourly rate varies from ½ mgd during the night at very dry periods, to over 4 mgd following very wet weather. This means that the two smaller pumps with an actual total capacity of 3.6 million gallons will take care of the sewage flow 95

per cent of the time. The last few years we have permitted sewage to fill up in the wet well and even back up in the trunk line during peak rates, which last only a short time, in order to avoid the expense of operating the big 4½ mgd pump.

Daily Operation and Records

This is what is required for operation. Twice a day the operator visits the plant, spending about 20 minutes inspecting the pumps and motors.

He sees that the packing for the pump is satisfactory and that there is a proper drip to feed the water seal. It should be noted, incidentally, that the water seal could not be connected directly to the water supply because of the possibility of creating a cross connection.

He also examines the sump pit in the dry well and operates the water-syphon pump if it contains water. On the record sheet he notes the power consumption for the day and the night, the water consumption when the clock for the meters has been wound, and any other item, such as testing the gas engine (this is done once a week). Once every Friday he takes a laborer with him and washes down the pump well, in order to insure good odor control. He cleans the screens each day, removing about two cubic feet of trash, and he inspects the floats that control the automatic operation of the pumps. There is a bell outside the building and one in the operator's home, which receive their power from storage batteries, and ring when there is a failure in the regular power or pumps.

Maintenance and Replacement

Outside of replacing two bearings, there has been no appreciable maintenance cost. Various kinds of packing have been used, including raw hide and cotton (during recent years we have been favoring the latter type). Regarding lubrication, the two larger pumps have been using oil while the smaller one uses grease. All the pumps have oil cups that are kept constantly filled with no. 10 oil.

The gasoline engine has not been used for any appreciable time because there has been no lengthy failure in power. Batteries for starting the motor are kept charged, ready for instant operation, and, as said before, the motor is run only for a few minutes each week.

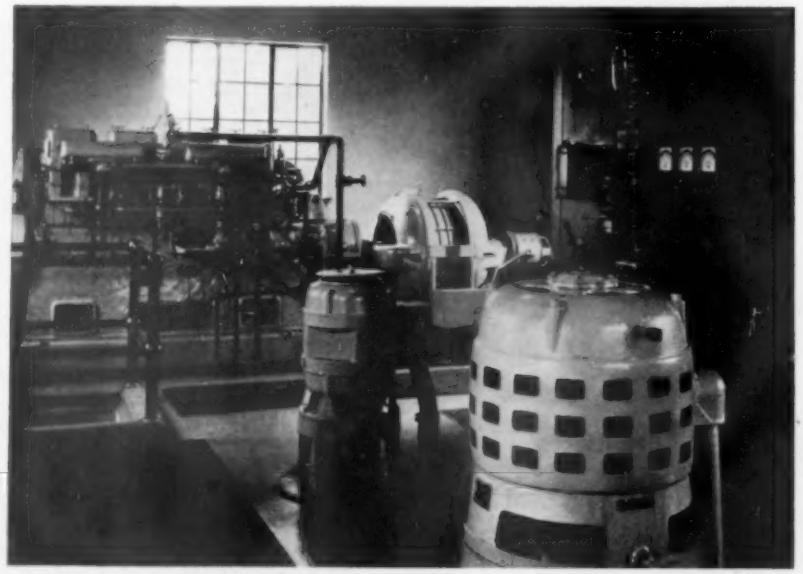
One Pump Replaced

After 10 years of operation we have had one pump that required replacing —the heavily worked 2-mgd unit. Last year we noticed that the impeller was wearing down, and this year we discovered that a small hole had developed on the frame which constituted the back of the pump. Although it was a difficult job, we were able to have it spot welded. In view of the fact that other holes might develop, we ordered a new pump from the same manufacturer. This new pump, when delivering 1,400 gallons per minute against a 77-foot head, will have an efficiency of 76 per cent against 66 per cent for the old pump—an increase of 15 per cent, due principally to improvements in design. The suction and discharge were the same dimensions so that no new pump fittings need be secured. The cost of the new pump will be $438, and we estimate that we will soon pay for it in power saved.

Costs

We can, of course, break no cost records because of the excessive lift that is required. The power cost is based on two items, (1) the demand and (2) the consumption. The demand is taken from the power chart and in the peak load for any 15-minute period. The cost of the demand is $100 for the first 50 kw or less, and $1.60 per kw for the next 150. The first 5,000 kwhrs of power costs us three cents, the next 8,632 costs us one cent, and all over this quantity, including night consumption, .006 cent—provided 30 per cent of the consumption used is between 8 p.m. and 8 a.m. Our electrical charges range from $300 to nearly $500 per month. This includes some power for pumping sludge and other small motors at the main sewage-treatment plant. The other items of labor and small quantities of material make the total cost of the pump station $5,500, and the cost per million gallons is $11.30.

The important factor, of course, is dependability and the modern pumps have it. Our feeling is, and our experience has borne us out, that you can design a pumping station with the same surety of operation that you can a gravity line. If economies can be obtained with a force line, there is no reason for not using it.



Looking at the first floor of the Princeton pumping station. In the background can be seen the auxiliary power unit and the switchboard with its control instruments.

Snow Removal Volunteer Workers

IT is going to be tough problem to remove snow this winter in New York City—as far as manpower is concerned. In one of his recent Sunday afternoon broadcasts Mayor LaGuardia stated that only 232 laborers and 35 drivers had registered this year, in contrast to 17,634 laborers and 3,438 drivers registered in the season of 1941-42.

"We've asked for all sorts of volunteers in the past," he stated. "Here is something new. As Commissioner Carey has announced, we are having extreme difficulty in registering the number of laborers we need for snow removal, as well as trucks. Now this means that we're going to have some difficulty unless we get some volunteer help."

If the volunteers are not available, the Mayor stated that it will mean a great deal of inconvenience to pedestrians on the cross-walks and a serious impeding of normal traffic.

Salt Lake City Looks 50 Years Ahead

By Alex Buchanan, Jr.
Secretary, Salt Lake City Planning & Zoning Commission

SALT LAKE CITY, with the aid of the National Resources Planning Board, has completed a post-war planning survey designed to cover a development period of 50 years.

As is quite generally known, the city, shortly after its founding by an intrepid band of Mormon pioneers, was laid out on broad and generous lines under the direction of Brigham Young, pioneer leader. The streets surrounding and paralleling 10-acre blocks were made 132 feet wide, with ditches skirting them to provide water for gardens and to carry off the surplus from numerous mountain streams reaching the city from nearby canyons.

Wisdom of the Pioneers

At first it appeared as though too great an area was being devoted to blocks and streets, but later growth and development vindicated the wisdom of the plan and gave Salt Lake City a leading place among American municipalities in anticipating modern trends and providing for traffic conditions as they exist today.

Contrary to requirements in most cities, Salt Lake had no need to purchase at great cost to the taxpayers additional land to widen its streets; nor did it have occasion to raze expensive buildings to make way for the space needed in providing highways for automobile traffic. All this, it would appear, was foreseen by its founders, although when the city was laid out skeptics thought they could see a great and unnecessary waste of public domain.

So this city, in preparing to meet the post-war period, had pretty much everything in its favor. The planning program, therefore, was greatly simplified. The survey was made a part of what is called the "Wasatch Front" project, which included in its scope all that area affected by the establishment of numerous war industries covering a great part of four of the leading counties of the state.

Many Improvements Proposed

Completed, the survey provides for and recommends development of the west side of the city—long woefully neglected—as a desirable residential area. The Jordan River is to be cleaned and deepened, and its banks adorned with flowers and shrubbery; railroad tracks are to be centralized and kept within a more limited area, and a Union Station is recommended to meet the needs of the various roads operating in this section.

The plan calls for a Civic Center radiating from the present site of the City and County Building and extending possibly three blocks east and west and two blocks north and south. This provides for a series of buildings to serve the city and county—a museum, a library building, and a civic auditorium to be used for conventions and other large gatherings.

Included in the survey are provisions for apartment house sites on the north bench in the vicinity of the State Capitol, while on the east bench a high-class residential center is to be maintained, much on the order of Federal Heights and Bonneville-on-the-Hill now established in that section.

To the southeast it is proposed to utilize the site of the State Prison (soon to be vacated for a new prison at the Point of the Mountain), for a new public park to meet the needs of that rapidly growing section of the municipality.

Support Pledged

The survey is quite comprehensive and will greatly improve local conditions. Not much can be done to carry out its provisions until after the war, but the plan has the pledged support of both the City Commission and the City Planning & Zoning Commission, and will be adhered to as closely as possible as the years advance.

On the campus of the Jordan High School, situated on the bank of the Jordan River, the beautification program has had an excellent start.

Pupils of the Jordan High School contribute their ideas for a picturesque development program. Art students do some of their sketching on the bank of the Jordan River.

Replanning an Obsolete Square Mile

A PRELIMINARY composite site study by the City Planning Commission of St. Louis for the redevelopment of a square mile of that city's "obsolete" area is here shown.

The Commission estimates that development costs will be about $55,000,000 for this area. That sum, to be provided by private capital under the Missouri Neighborhood Redevelopment Corporation Law, recently passed, does not include the costs of major street improvements, neighborhood schools and parks envisioned in the report. These costs are to be borne by

Sites for industry are in solid black; commercial buildings, less dark; and residential buildings in white.

the city of St. Louis.

The plan uses the general assumptions that:

1. New residential neighborhoods should retain no existing commercial or industrial buildings except for local service needs and where there are such large concentrations that their acquisition would be prohibitive in cost.

2. All other property except streets, parks, and institutions be acquired by redevelopment enterprises to control factors of environment.

3. Street space be reduced to the minimum required for accommodation of all traffic.

4. Limited redesign of the street plan provide large unbroken blocks, public safety be increased by preventing through traffic except on wide major streets, the monotony of the existing gridiron street pattern be broken by introducing interesting vistas without necessitating general disruption of existing utility installations.

Some of the specific features of design incorporated in the present plans include:

1. The development of more or less complete neighborhoods having unity of design and arrangement.

2. A neighborhood park, public school, public playground, and community center as the central focal point of community life.

3. Shopping centers conveniently placed.

4. Ample provision for off-street parking, both in garages and in compounds.

5. A wide variety of types and sizes of dwelling accommodations, including single-family dwellings in grouped buildings, and apartments ranging in size from one and one-half to four and one-half rooms.

6. Permanent high type construction, ample room sizes and pleasing architectural design.

7. Buildings mostly two and three stories in height but with a few 10- and 12-story structures at specified locations.

The plan generally proposes to serve middle income families; the Commission stresses the fact that it is not to be considered a strict slum clearance project, but should be classed as a redevelopment. Lon Hocker, Jr., is chairman of the City Plan Commission; Harland Bartholomew is the engineer; Arthur F. Schwarz, Jr., the designing architect. There are about 9,398 living units in the specified "obsolete" area housing about 32,257 persons; the plan proposes about 11,321 living units, an increase of 20.4 per cent in living units above the present, and a 31 per cent population rise to 42,427 persons.

How Cities Will Finance Post-War Projects

Reports show uncertainty and diversity of ideas

As municipalities throughout the nation are making plans for post-war projects, the problem of financing looms increasingly large. Not the least factor of uncertainty is the extent to which aid may be expected from national and state governments.

The Daily Bond Buyer (New York) for June 3 carries a spot check of the post-war plans of communities in various population groups. Replies were received from 52 municipalities to a questionnaire which asked, among other questions, "How will the cost be financed?" Here are typical replies to this particular inquiry:

BUFFALO, N. Y.—*From George W. Wanamaker, Deputy Comptroller:*

"Nobody knows where the money to pay for these public works will come from. Buffalo has no taxing margin available and would have to resort to borrowing. Nobody knows whether federal and state funds will be made available locally."

JACKSONVILLE, FLA.—*From Earle E. Jones, Secretary City Commission:*

"It is our thought that at the conclusion of the war, some kind of federal participating program will be enacted by the Congress, and, in that event, the City Commission will be ready with plans for submission to the federal government on a participating basis. Therefore, it is impossible to say when we will get started on such a program or exactly as to how it will be financed."

MONTCLAIR, N. J.—*From Wm. J. Minsch, Director of Revenue and Finance:*

"Financing of the cost will be from various sources including sale of bonds, assessment against the benefiting property owners, and from proceeds of taxation."

NEW HAVEN, CONN.—*From Charles E. Downe, Acting City Plan Engineer:*

"The approximate cost of the projects submitted by the various city departments total $17,300,000. Those submitted by the Plan Commission are estimated at $29,200,000, giving a total of $46,500,000.

"The method of financing these projects has, as yet, not been determined, and is one of the phases of the Capital Budget Study which is being discussed and being worked on at the present time.

"It is hoped that this program will be ready for immediate use at the end of the war, with plans ready and the financial structure of the city geared to start at that time."

NIAGARA FALLS, N. Y.—*From E. T. Creagh, City Comptroller:*

"It is believed that the financing of these projects will be through a coordinated effort of the federal, state, and local governments. The writer is at present preparing a long-range financial program, and from early studies, it is believed that the financing will be done by the combination of two methods—namely, through direct taxation and through bond issue. It is impossible to tell at this time just what proportion each method will be. The particular nature of each project will determine whether it should be financed by direct taxation or from the proceeds of a bond issue."

PORTLAND, ORE. — *From Wm. A. Bowes, Acting Mayor:*

"The big problem, here as elsewhere, will be methods of financing. Legal restrictions, both city and state, present a real problem due to taxing and bonding limitations."

ROCKY MOUNT, N. C.—*From L. B. Aycock, City Manager:*

"If government assistance is available to any extent we will apply; otherwise, we would go as far as we could within our ability to finance."

SPOKANE, WASH.—*From O. A. Dirkes, Commissioner of Finance:*

"We have definite plans as to assessing part of the cost of street grading and paving to the abutting property; other street work from gas tax reserve funds as far they will go. We plan also some cumulative reserves for these purposes. Then, too, there is the possibility of issuing some bonds."

A Comment from A Training Camp

TO the Editor of THE AMERICAN CITY:

With the tremendous need that exists throughout the country for community facilities and amenities, it seems only common sense that those communities planning war memorials devote their resources toward the building of structures of use and value to the inhabitants of the community—which, naturally, will include many returning soldiers. Surely, these will be more appreciated than statues or blocks of granite.

Community buildings and meeting places should be an important part of works reserve programs. Moreover, it should be obvious that, in lieu of a better place to spend his time, the pool halls, beer joints, and drug store corners may well continue to be typical meeting places for the average American fellow.

(PVT.) CARL E. CARLSON,
Godman Field, Fort Knox, Ky.

See also "Public Libraries as War Memorials," page 79 of this issue; and "When the Boys and Girls Come Home," front cover of the August 1943 issue.

Snow Removal by Contract

Boston develops a fool-proof accounting method that insures accurate payment to contractors for snow that is actually removed and dumped

By THOMAS J. MURPHY
Boston Finance Commission

SNOW removal at best is an expensive job, difficult to organize. Similar to fire-fighting, it must meet emergency conditions under unfavorable circumstances and get the work done in a hurry.

One of the consistent characteristics of the work is that a city never has as much equipment as it would like for the job. During the past years snow removal has become one of the emergency methods of offering unemployment relief, and in Boston the Public Works Department developed a "call" system to avoid having a mob on its hands every time a little snow fell. While this gives needy men the wholesome opportunity of earning a little money, it is a poor second to the money-saving efficiency of machines. Lately, the Department has had to appeal for the help of high school boys, since the war has at least temporarily eliminated the unemployment problem.

Checking System

To combat equipment shortages, the Department makes it a practice, as have probably the majority of other cities also, to hire a fleet of privately owned trucks. To avoid as much confusion as possible, it has developed a checking system that guarantees fair and equitable payment for faithful performance by the operators.

The evolution of the present system covers an experimental period punctuated with all sorts of payment difficulties. Trucks hired on a load basis alone, would be faced with inequalities because of differences in distance that the snow needed to be hauled and in carrying capacity of the trucks. If they were hired on an hourly basis, they would be faced with the unhealthy situation of penalizing the industrious worker. After every snowfall, complaints were bound to arise. The system that Boston developed works in the following manner.

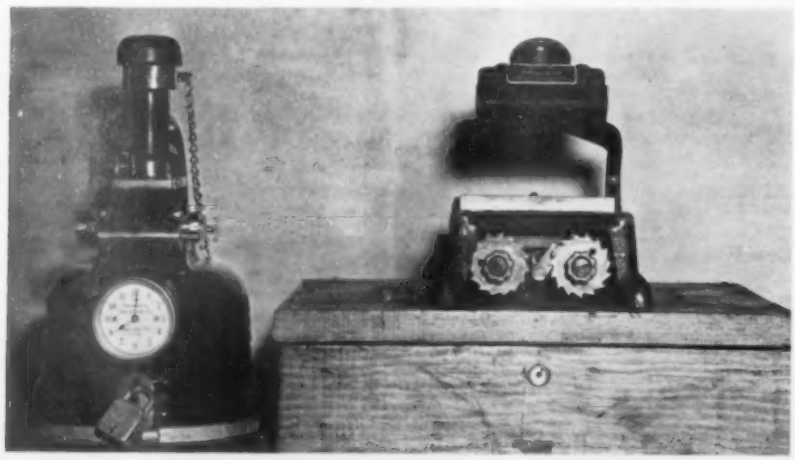
Officials have carefully laid out the entire city into several snow-removal districts. One of these, the business district, receives a high standard of service, requiring immediate and complete removal of snow from the pavement. This has been assigned directly to the city's limited labor force; the balance of the districts are administered on a contract basis.

How It Operates

The procedure is actually simple to operate. It is based on the use of a plate holder with three independent changeable metal sections. The top section denotes the district number and the number of the truck. The lower section carries the vehicle registration number and the cubic yard capacity of the vehicle. The third section, located at the side of the holder, denotes consecutive load numbers and is known as the load plate.

At the beginning of a storm, the Department sends each of the trucks to a district measuring station where the engineer computes the capacity of the body. The driver then receives his plate holder with the upper and lower plates in place identifying the district number, the truck, and the capacity of the vehicle. The engineer also gives him a Capacity Certificate, retaining one copy and sending a third to the central office.

The truck then proceeds to its assigned street and reports to the loading inspector. After loading with snow, the inspector inserts a numbered load plate in the driver's plate holder and makes an entry on his street report. On arrival at the unloading area, a second inspector examines the load and directs the dumping. He then takes the plate holder, inserts it in a specially designed Addressograph imprinting machine and stamps duplicate receipts, retaining one and giving the other to the driver. This constitutes the driver's record that the load was dumped and gives him an accurate check against the payment he receives. The tickets also are stamped in a time clock that records the date, time, machine number, serial number, and inspectors identification. These operations can be performed quickly and easily, causing no loss of time to the truck driver and entailing no more men than would normally be used to direct the dumping.

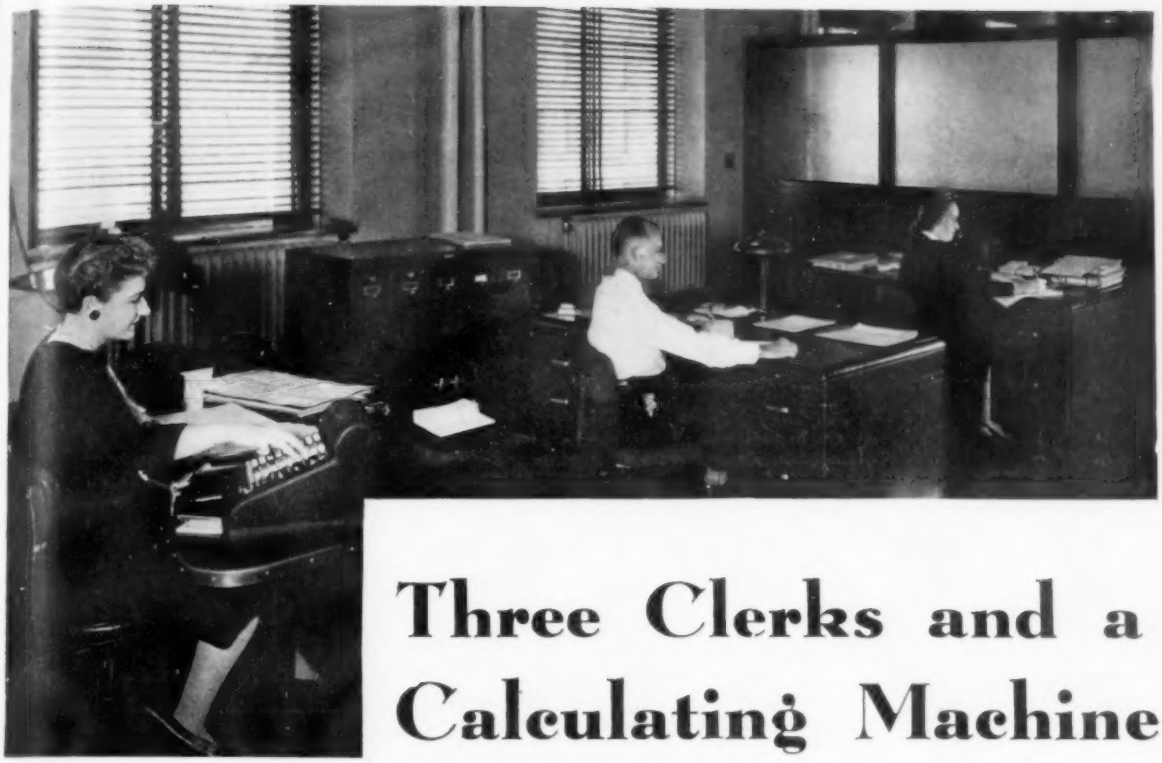


The time clock and stamping machine used in connection with Boston's snow-removal work. These machines are located at each of the dumping points.

Payment Basis

Calculation of payment at the end of the day is based on the daily reports of both the loading and the dumping inspectors, the duplicate receipt tickets, and load plates. It eliminates the possibility of either under or overpayment and guarantees fair treatment to all drivers.

The practice has been in use for some time here in Boston and has no limiting characteristics that would prevent its being applied anywhere else where snow removal is a problem and hired trucks are used.



Three Clerks and a Calculating Machine

Handle Payroll for 425 Employees and Keep Costs of 116 Pieces of Equipment

By J. D. Senevey
Commissioner of Accounts and Collections, Water Department

THE Kansas City Water Department, which serves a population of approximately 500,000 in Kansas City, Mo., and its suburban areas, is operated as a separate unit of the city's government, with a complete set of accounting and cost records. The Department requires the services of 425 employees and owns and operates 116 pieces of transportation and other type equipment. The payroll-labor distribution and transportation-costs distribution require the time of only two clerks and part of the time of one calculating-machine operator. This is made possible by the use of two rather unusual forms, which were developed after an extensive survey of cost-distribution methods and which have proved their value in two years of use.

Individual Summary Payroll

The Individual Summary Payroll form is used only where it is necessary to spread the employee's time to various account or work orders. Where such distribution is unnecessary, as for example in the case of the salaries of office personnel and meter readers, postings are made directly to the accounts. One of these forms is prepared for each employee semi-monthly by imprinting by means of an addressing machine in the block at the top of the form the employee's name, job classification, rate of pay, Victory tax deduction, or any other deductions to be made. The total hours worked by each employee, with a brief description of the work performed, is reported each day to the accounting office by timekeepers. After these time sheets have been codified by an accountant, they are passed on to the clerk in charge of payrolls and labor distribution. The total hours worked by each employee each day is entered by this clerk on the master coupon of the Individual Summary Payroll Form. At the same time, the total hours worked is posted to the unit distribution coupons, a separate coupon being used for each account or work order that is designated by the accountant's codification.

When time reports for the final day of the pay period are received and posted, an operator, using our Burroughs Duplex Calculator, totals the hours on all the coupons, balancing the totals of the unit-distribution coupons with the total of the master coupons. The total amount to be paid to the employee is computed and entered on the master ticket, and the operator then distributes the costs to the various coupons by prorating amounts on the basis of the hours worked. Charges on the unit-distribution coupons are then totaled and posted in the "proof" column of the master ticket. The total of such charges in the "proof" column must equal the amount in the "total" pay column.

At this point, the form is separated, the coupons of the duplicate copy being detached and sorted according to account numbers. The calculating-machine operator totals each group of coupons and proves the grand total with the total of the master coupons on the original copies of the forms. The totals of each packet, or group of unit-distribution coupons, provide posting media for the general and subsidiary ledger accounts. The packet of coupons, charged to the construction-work-in-progress account in the general ledger is now sorted according to various work-order numbers, and the totals of the charges to the work orders are balanced with the total charge to the construction-work-in-progress account, or control account. A third sorting is

then made according to the budgetary account numbers, and postings are made in the same manner as to the accounts in the general and subsidiary ledgers.

The original copies of the form are filed alphabetically by name of employee as a permanent record. These forms are numbered and this number is recorded on each unit-distribution coupon. This is done in order to be able to check the coupons from the duplicate copies back to the original, after they have been detached.

Equipment Record

The Transportation Record form follows the general pattern of the labor-distribution form, except that it is prepared for a monthly rather than a semi-monthly period. The form is used to distribute the cost of operating cars and trucks on a mileage basis, and to distribute the costs of operating other equipment, such as tractors, air compressors, and pumps on an hourly basis. An addressing-machine record is kept for each piece of equipment.

Prior to the beginning of each month, a separate form is prepared for each piece of equipment. Employees in charge of, or using, each piece of equipment are required to make a daily report showing what the equipment is used for, and mileage in the case of cars and trucks, and hours in use for all other equipment.

These work reports are codified in the same manner as the time reports and posted in the same way. The total miles or hours for a particular piece of equipment for a particular day is posted to the master coupon, and distributions are made among the appropriate coupons representing the accounts which are to be charged. At the end of the month, when all the reports are in, the calculating-machine operator totals the miles or hours on all tickets and ties in the total of the unit distribution tickets with the total of the master ticket. Costs are then figured by multiplying hours or miles by the rate per hour or mile. The coupons from the duplicate copy are then separated and sorted by account number, each group is totaled, and the total of all groups checked to the total of all costs, as shown on the master tickets. Group totals are then used as posting media for the general and subsidiary ledgers. Second and third sortings are made and posted in the same manner as the group totals from the Individual Summary Payroll form.

All transportation expenses, including maintenance and operating expenses, are charged directly to a garage clearing account, and all rentals are credited to this account. The rental rates charged on equipment are adjusted periodically as experience dictates.

There also is kept a set of memorandum accounts, reflecting the total costs of operation and maintenance of each individual piece of equipment. A monthly report is prepared from these data showing the cost of operating the equipment.

Advantages Include Simplicity and Accuracy

With these forms, it is not necessary, at the end of the accounting period, to draw off on work sheets or distribution forms the expenditures for each individual account. After the individual forms have been proved, the actual cost distribution becomes a very simple sorting job; the forms can be re-sorted numerous times to accomplish any result desired. At every stage of the accounting procedure, proof is secured that the postings to the individual coupons have been properly made, so that at the end of the accounting period little difficulty is experienced in balancing the total of the individual-account charges with the total expenditure. These forms have been in use in the Kansas City Water Department for two years, and have proved to be a very economical and extremely satisfactory means of cost distribution.*

* From the April 1943 Bulletin of the Municipal Finance Officers Association, Chicago, Ill.

A Plan for the Elimination of Mississippi Mud

By Charles F. Sperling
Borough Engineer
Wilkinsburg, Pa.

SOME of us who are not actively entively engaged in the war effort, are devoting our surplus energies to the consideration of post-war planning. Current suggestions are many and varied—but I am firmly convinced that the first essential of any method of planning is what the New Englander terms "shrewdness"; the Kentucky mountaineer, "gumption"; and the Westener, "horse sense." In other words, good common sense.

It is estimated that at least 30 million persons are engaged in the war effort, and that our armed forces will soon number 10 million. Although a goodly number of our military men will be engaged in the problems of government and reconstruction in foreign countries after the war, many more will very shortly return home. Moreover, a few months after peace is restored, three-quarters of the plants now manufacturing armaments and the paraphernalia of war will close.

Thus, as time is a highly important factor, I feel we should consider a project which can be got into workable shape quickly—before we turn our full attention towards problems sure to prove both difficult and lengthy. Such a project should make use of existing machinery, tools, and equipment, and provide work for a large group of men. It should not necessitate a relatively large expenditure for materials, nor should its benefits be confined to a small section of the country.

Proposed Project

A project that would conform to these requirements, in my opinion, would be the straightening of the channels and deepening of the beds of the Mississippi River. (Such a project could equally well apply to the Ohio River.) The practicability of such an undertaking could be easily checked by the War Department, as it has both data and surveys in its possession.

As almost everyone knows, the Mississippi, is snake-like in shape—extremely crooked for most of its length. Thus, either the straightening of the existing channel or the construction of a new one, would not only shorten it, but would materially reduce flooding and the washing away of its banks. In fact, by the above operation and the deepening of the channel and river bed, innumerable swamps would be drained and thousands of acres could be reclaimed and put into use as farmland.

Although I am familiar with this problem in its broadest outlines only, I should very much like to see both state and federal officials look into it thoroughly—as it seems to me to have all the qualifications of a sound project for post-war. Is not this a project meriting the support of local officials, especially of municipalities and counties along the Mississippi and Ohio rivers?

Post-War Plans for Small Communities

By Clarke Gardner, M. Am.Soc.C.E.
City Engineer, Salisbury, Md.

On October 1, 1943, the initial meeting was held of the newly organized Salisbury-Wicomico County Planning Commission, appointed by joint action of the Mayor and Council of Salisbury, Md., the County Commissioners of Wicomico County, and the Salisbury Chamber of Commerce.

Firmly believing that much will depend on preparations made now to control the development and readjustments that will follow the termination of the war, this new city-county planning commission has under consideration a post-war and long range plan of action. The following recommendations offered by the writer as a member of the commission are being given favorable consideration:

Master Plan Needed

So far as public works are concerned, it must be understood that they should be undertaken only on the basis of their essential need. Public works projects by themselves cannot and will not solve unemployment. The criteria of selection for public improvement, therefore, should be on the basis of how well they promote the health, safety, order, and prosperity of the community. This points to the necessity for comprehensive surveys and studies of present conditions and anticipated future growth.

Consequently, a master plan and descriptive outline should be prepared at the earliest practicable date. This plan should include the general location, character and extent of streets, bridges, waterways, boulevards, parkways, playgrounds, public buildings, parks, airport facilities, and the general location and extent of public utilities operated for electricity, water, gas, drainage, sanitation, and transportation.

The plan should also show, in a general way, contemplated public improvements. This will include adequate provision for the promotion of safety from fire and other dangers, elimination of traffic hazards, installation of health and recreational facilities, and the promotion of good civic design and arrangement.

Street and Highway Work

Maintenance and the extension of streets and highways represent an important part of municipal development. For example, Salisbury has about 75 miles of streets, of which 40 miles are improved with bituminous surface and 6½ miles with concrete pavement. Due to a combination of war restrictions and lack of appropriations, it has not been possible to provide proper maintenance. The inability to procure asphaltic material for repairs is creating a condition that will cause heavy expenditures in the near future.

It is important that the street program be thoroughly studied and efforts made to provide for concrete gutters on present improved streets. In the absence of sidewalks, combination curbs and gutters should be placed as soon as funds become available. The installation of these combination units will prevent a deterioration of the edges of asphaltic pavement and will materially assist in the drainage, particularly where flat grades are involved.

Another matter that should be given attention is the installation of wider bridges at stream and rail crossings. The narrowness of many present-day bridges creates a definite hazard to vehicular traffic.

A general study of roads should include special consideration for the transportation facilities to and from the municipal airport or the site for a proposed airport. Highway planning in the vicinity of an airport involves the development of a network of roads that give all possible accessibility, particularly if freight transportation by air is envisioned as a post-war possibility.

Important, too, when considering a highway situation is a review of pre-war traffic conditions in relation to parking facilities. The lack of sufficient parking facilities adds to traffic congestion, particularly where there are narrow streets in the business district. Consideration should be given, therefore, to the establishment of public parking lots, centrally located, which will assist in relieving post-war traffic congestion.

Storage Facilities

In many cities adequate facilities are lacking for the storage of vehicular equipment and other rolling stock used in connection with the operation of public works. Lack of space not only makes for improper "housekeeping" but leads to inefficiency in the storage of materials and equipment. A concentration of equipment in a suitable garage and storage yard undoubtedly would save an overhead expense and improve general efficiency of all the operations.

Extending Sewer Facilities

As an alternative to bond issues for sanitary sewer extensions, it is well to consider direct appropriations for limited extensions, or an assessment method for a portion of the construction cost.

Storm-water drainage goes hand in hand with the development of streets. It is suggested, therefore, that a general design be made showing storm-water drainage requirements in those sections of the city that do not have streets.

Water Supply Improvements

Many small cities do not have adequate sources of water supply or satisfactory methods for treatment. In most instances, treatment of water is desirable and necessary in order to eliminate those objectionable factors which cause corrosion or peculiar taste. Another important corrective measure would be to overcome inadequate pumping and distribution facilities.

General studies should be made on fire-flow requirements, the reduction of dead-end mains, the efficiency of pumping equipment, and the proper treatment of water.

A pure and wholesome supply of water is not only essential to public health, but may be used as a community yardstick to help measure the industrial progress and civic betterment.

Parks and Playgrounds

Consideration should be given to the development of parks and playgrounds with appropriate recreational facilities. Swimming pools, log cabins, and picnic features provide attractive means of recreation adaptable to all age groups of a community. For example, Salisbury has a municipal park, containing approximately 70 acres and centrally located, which is about 40 per cent developed. A natural fresh-water lake, lagoons, small islands, together with rustic foot-bridges, offer a mecca for visitors and citizens alike. Roadways, timber bridges, and rustic benches have been added. In order to develop the full potentialities of a park system, locations can be enhanced through proper landscaping, installation of playground equipment, tennis courts, and other recreational facilities. Supervised youth programs are an asset to any city and wholesome recreation would certainly help to build the citizens of tomorrow.

Airport

While it is felt that air transportation will not supplant the automobile, "air mindedness" will be a prime factor after

Small cities, as well as the large metropolitan areas, are faced with the obligation of preparing for post-war rehabilitation and extension of public works facilities. Among the matters under consideration in Salisbury and suggestive for other small cities are preparation of a master plan of improvements, repair of streets, improvement of sanitation facilities, added recreational features, development of airports, neighborhood landscaping programs, zoning control in metropolitan areas, installation of parking lots, and the revamping of house numbering and street name signs.

the war in those cities having nearby airports. Salisbury is fortunate in having a Class IV airport located within 4 miles of the city. This airport site contains 650 acres, has three 5,000 x 150 foot concrete-paved runways capable of carrying 50,000 pound wheel loads, and is rapidly nearing completion.

Those cities in a like position can plan for hangars, administration buildings, and other such facilities that are within their financial means.

Landscaping

A practical city is most desirable because people live in it by choice. Desirable environment for residences must be provided. The development of parkway plots, the planting of trees and shrubbery should be encouraged. Even certain commercial highways and areas abutting railroad rights-of-way should be included in this category. This can be accomplished through civic, business, and general neighborhood groups. Such a plan will pay big dividends towards making a city livable.

City-County Coordination

Nearly all communities have problems with certain areas bordering their corporate limits. In some cases, property is developed without benefit of zoning and building codes. Sometimes, streets are built without due regard for topography and proper alignment. In many instances too little attention has been given to design of sewers and drainage structures. If these areas could be operated under regulatory measures, thousands of tax dollars in construction, operation, and maintenance would be saved annually. Proper coordination between local and adjoining governing units will eliminate these conditions which have always proved costly to the taxpayer.

House Numbering—Property Maps

Many of our smaller cities lack a logical house numbering system. The complete study of existing house numbering could profitably be made with the idea in mind of devising a system for proper numbering in each block so as to eliminate existing duplications and inconsistencies. Such projects readily receive the endorsement of postal authorities and civic organizations. Coincidental with the house-numbering activity a plan might be drafted for the erection of additional street name signs; work of this kind can be scheduled over a limited period of years.

Few cities have complete and up-to-date property maps. Establishment of maps of this kind would enable the city to provide a record of all real estate within corporate limits. The maps would show lots, dwellings, widths and names of streets. A map number, block and lot number would be asigned for identification. The maps, in conjunction with a card index system, would assist in the transference of property and would enable the tax collector to accept a system whereby it would be impossible to overlook taxable property. The maps and cards also would be an invaluable source of public information aside from the fact that they would be most useful in all planning operations.

Conclusions

Every city should take "inventory" of its present status and develop a general post-war plan. Proposed improvements can be scheduled over a period of years consistent with economic, financial, and social requirements. After all, city planning is merely the exercise of such foresight as will promote the orderly and sightly development of a community. Therefore, plans may be classified as post-war, intermediate, and long range. Now is the time to plan for the future because every city, whether large or small, has a splendid opportunity to insure an equitable return on the future investment of the taxpayers' dollar.

Census Facts Concerning Negroes

LAST month the Bureau of the Census—in response to numerous requests concerning Negroes—issued a report* with accompanying tables, on the changes in the Negro population between 1870 and 1940. A summary follows:

Negro Population Growth—In 1940 the Negro population totaled 12,865,518—an increase of 139 per cent in the 70 years.

Birth and Death Rates—Although in 1940 the Negro birth rate was little more than half the 1870 rate, this decrease has not resulted in a corresponding decrease in the Negro population. Explanation is found in the decline in the Negro death rate which in 50 years decreased 57.1 per cent.

Illiteracy and School Attendance Among Negroes—In 1870, 81.4 per cent of all negroes 10 years old and over were illiterate, but by 1900 less than half were in that category, and 1930 (the last year for which data on illiteracy were obtained) only one out of every eight Negroes could not read and write. School attendance among Negroes from 5 to 20 years of age increased from 31.0 per cent in 1900 to 64.4 per cent in 1940.

Negroes in Nonagricultural Pursuits—In 1940 about two-thirds of the Negroes employed on other than public emergency work were engaged in nonagricultural pursuits. Such pursuits in which the proportions of Negroes increased during the 1930-1940 decade include manufacturing and mechanical industries, transportation and communication, trade, public service, and clerical occupations. Aside from agriculture and domestic and personal service, the number of Negroes employed in the manufacturing and mechanical industries has far outstripped the number otherwise employed. For example, in 1930, 18.6 per cent were so employed, as compared to 7.2 per cent in transportation and communications—the fourth ranking occupations.

Professions and Supervisory Pursuits—In 1940 there were about 110,000 Negroes in the various professions, as compared with approximately 34,000 in 1890. Professions in which the number of Negroes has increased include the ministry, teaching, medicine, dentistry, nursing, law and social welfare. In 1940, there were also 48,154 Negro men and women proprietors, managers, and officials in industries other than agriculture. The number of retail stores with Negro proprietors increased from 22,756 in 1935 to 29,827 in 1939, or more than 30 per cent, while the sales of such enterprises increased 49 per cent.

Negroes also control and supervise a number of larger businesses. Thus, 21 Negro-owned and operated legal reserve life and assessment companies with a combined premium income of over $16,000,000 in 1941 had total assets of more than $26,000,000 and nearly $345,000,000 of insurance in force. Of the 210 Negro newspapers published in 1940, 117 had a combined circulation of 1,123,000.

Negro-Owned Homes Have Increased—In 1890, 18.7 per cent of Negro-occupied homes were owned by Negroes; in 1940, 22.8 per cent—or 719,771—were Negro owned—and of this total, 333,467 were in urban areas.

Negro Churches—Number, Membership, and Value of Church Edifices—From 1906 to 1936 there was an increase of 46.4 per cent in the average membership of Negro churches. Negroes have invested large sums in church edifices: in 1936 the total value reported for such structures was $164,531,531, or nearly 3 times the value reported in 1906.

* "Significant Facts Concerning the Negro Population," prepared by Dr. Joseph R. Houchins under the direction of Dr. Leon E. Truesdale, Chief of the Population Division, and Howard G. Brunsman, Assistant Chief.

Effective Introduction to Planning Report

"The forces driving forward and sustaining the American people are broader than a simple desire to overwhelm our enemies, impelling as that motive is in a conflict for survival. Certainly that desire is strengthened in the great majority of us by a resolve to build a a better post-war world, rather than merely to restore the pre-war status quo."—John B. Blandford, Jr., Administrator, National Housing Agency.

It is because we believe that city planning, as controlled through a master plan, can be an important instrument in the achievement of this better post-war world, that we offer this study for your consideration.

—From "Report on Master Planning," by the Citizens' Planning and Housing Association of Baltimore, Md.

Model of Battery Park Development, Manhattan

Plan of Soundview Park, the Bronx

Parks, Parkways, Express Arteries, and Related Plans for New York City After the War

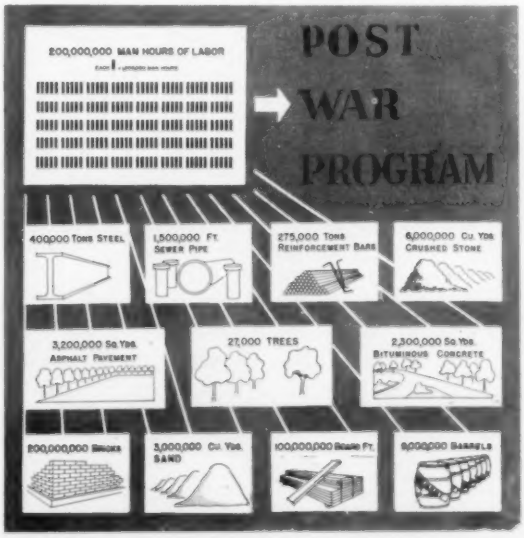
By ROBERT MOSES

WE face the greatest problem of economic readjustment in our entire history. We must prepare to fight mass unemployment and its grizzly corollaries. Numerous agencies—public and private, global, national and local—burn midnight oil and smoke interminably over it. The President recently announced a proposal to give every man in the armed services a bonus of six months' pay and other benefits on discharge. This separation pay may be desirable, but it is only a palliative.

Public works are recognized as one necessary element in the solution. Washington, our states and cities have talked about, or actually embarked on, programs; but with a few notable exceptions these programs are tentative, vague, grandiose, cautious, inadequate or silly.

The city of New York has a realistic program of public work for post-war construction. Money has been provided in our capital budget for design. Executives, engineers, architects, and draftsmen are actually making contract drawings and specifications. Adequate safeguards have been provided to insure a coordinated program of useful and necessary works. By the middle of 1944, projects having a total estimated construction cost of over $700,000,000 will be completely designed and ready for advertising.

In this article I speak primarily as head of the Department of Parks, but also as a member of the City Planning Commission—to whom park, parkway, arterial, and housing and related projects are referred—and as head of the State park system and Triborough Bridge Authority. The Park Department projects range in size from large park and parkway construction jobs, costing several million dollars, to small park buildings and reconstruction of park paths costing only a few thousand. Their estimated cost aggregated $115,093,545. All of these projects are necessary parts of a carefully planned program of park and parkway expansion and rehabilitation, coordinated with other arterial improvements in the metropolitan area, and with housing, school, and other construction involving recreation in the broadest sense of that overworked word.



Materials and manpower needed for New York City's $700,000,000 Post-War Program

The Park Department's Philosophy

Let me state briefly the philosophy of the New York City Park Department as to post-war expansion. We do not believe in revolution. The city is not going to be torn up and rebuilt on a decentralized satellite or other academic theory. Therefore, we do not have to wait for the painting of the new, big, over-all picture constantly referred to by revolutionary planners. We believe that the older, run-down sections of the city will be rebuilt. We believe that there will be a much slower development of outlying open lands within the city and its suburbs, that subway

Post-War Works Program—New York City

Department of Parks

(See map on opposite page)

Manhattan

1	Battery Park, Reconstruction of Park	$1,642,475
2	Central Park, New Ice Skating Rink	275,000
3	Central Park, New Boathouse at 72nd St. Lake	110,000
4	Central Park, Arsenal, Alterations to Mechanical Equipment	46,300
5	Central Park, Reconstruction of Wall & Sidewalk, 108th St. & Central Park West	7,000
6	Randall's Island, Reconstruction of Sea Wall	50,000
7	Randall's Island, Pedestrian Bridge to the Bronx	142,000
8	Ward's Island, Pedestrian Bridge to Manhattan	980,000
9	Connection Triborough Bridge to Harlem River Drive	472,560
10	City Hall Park, Reconstruction of North Section	417,500
11	St. Nicholas Park, Reconstruction of Park	513,000
12	Bennett Park, Reconstruction of Park	42,400
13	Riverside Park, Alterations to Claremont Inn	146,400
14	New Baseball Fields, Central Park, North Meadow	128,300
15	New Baseball Fields & Playground, Morningside Park	48,800
16	New Playground, Adjoining Proposed P. S. No. 192	216,000
17	New Playground, Central Park, W. 81st St.	44,500
18	New Playground, Abraham Lincoln Houses, 5th Ave., & 132nd St.	40,000
19	New Playground, Amsterdam Houses, Amsterdam Ave., & 61st St.	30,000
20	New Playground, Lower Harlem Houses, 3rd Ave., & 112th St.	40,000
21	New Playground, Gov. Smith Houses, Catherine & South Sts.	100,000
22	New Playground, Adjoining Machine & Metal Trades High School 1st Ave. & 96th St.	70,000
23	New Playground, East River Drive, 95th to 97th Sts.	76,000
24	New Playground, Lenox Ave., & W. 145th St.	525,000
25	New Playground, East River Drive & E. 61st St.	49,000
26	New Playground at Bathhouse, W. 59th St., W. of Amsterdam Ave.	2,150
27	Addition to Playground, Lexington Ave., & E. 105th St.	2,650
28	Addition to Downing St. Playground, Downing St. W. of 6th Ave.	2,650
29	Reconstruction of Baseball Fields, De Witt Clinton Park	25,450
30	Reconstruction of Playground at Bathhouse, Rutgers & Henry Sts.	7,450
31	Reconstruction of Playground at Bathhouse E. 23rd St. & East River Drive	11,700
32	Reconstruction of Carmansville Playground, Amsterdam Ave. & W. 151st St.	45,600
33	Reconstruction of Coleman Sq. Playground, Cherry & Monroe Sts.	49,850
34	Reconstruction of Playground, 150th St., W. of 7th Ave.	9,650
35	American Museum of Natural History, Reconstruction & Improvements	3,350,000
36	New York Public Library, Central Building, New Electric System	256,000
37	Metropolitan Museum of Art, Reconstruction & Improvements	5,209,080
	Resurfacing of Park Walks, Roads & Playgrounds	1,399,300
	TOTAL MANHATTAN	$16,583,765

Brooklyn

1	Marine Park, New Park Development	$8,000,000
2	Canarsie Beach Park, New Park Development	2,376,000
3	Spring Creek Park, New Park Development	2,712,050
4	Dyker Beach Park, New Swimming Pool	1,134,000
5	Prospect Park, New Boat House	120,000
6	Coney Island, Beach Improvement	2,110,000
7	Ocean Parkway, Caton Ave., & Ft. Hamilton Parkway Grade Eliminations	1,228,000
8	Conduit Blvd., New Parkway Construction	1,175,000
9	Belt Parkway, Parkway Widening	951,500
10	Van Voorhies Park, New Park Development	178,000
11	Ft. Greene Park, Development of Addition & Restoration of Monument	95,100
12	Prospect Park, Studies	7,000
13	Interborough Parkway Extension, Studies	2,000
14	New Baseball Fields, 39th St., & 2nd Ave.	21,750
15	New Playground, Hopkinson Ave., & Marion St.	35,000
16	New Playground, Linton Park, Dumont & Miller Aves.	2,650
17	New Playground, Parade Grounds, Parkside & Coney Island Aves.	71,550
18	New Playground, 3rd Ave., & 64th St.	58,300
19	New Playground, Adj. P. S. No. 44, Putnam & Throop Aves.	67,350
20	New Playground, Pierrepont Park, Columbia Hts. & Pierrepont St.	17,500
21	New Playground, Adj. P. S. No. 16, Wilson St. & Lee Ave.	55,150
22	New Playground, 7th Ave. & 18th St.	108,000
23	New Playground, Monroe St. & Ralph Ave.	110,000
24	New Playground, Brownsville Houses, Sutter & Stone Aves.	75,000
25	New Playground, Marcy Houses, Nostrand & Myrtle Aves.	80,000
26	New Playground, Gowanus Houses, Hoyt & Wyckoff Sts.	20,000
27	Reconstruction of Baseball Fields, Cooper Park, Maspeth Ave. & Sharon St.	29,680
28	Reconstruction of Playground, Betsy Head Park, North Section	72,100
29	Reconstruction of Playground, Lindsay Park, Lorimer & Leonard Sts.	39,250
30	Reconstruction of Playground, E. 38th St. & Flatlands Ave.	13,250
31	Reconstruction of Playground, Ocean Parkway & Avenue O	4,240
32	Resurfacing Eastern Parkway	416,000
33	Brooklyn Institute of Arts & Sciences Sciences Central Museum, General Improvements	157,120
	Botanic Garden & Laboratory, Improvements	52,000
	Children's Museum, Construction of New Building	1,100,000
34	Oceanarium, Coney Island	1,502,000
	Resurfacing Park Walks, Roads & Playgrounds	351,560
	TOTAL BROOKLYN	$24,548,100

Bronx

1	Soundview Park, New Park Development	$2,715,000
2	Pelham Bay Park, Development of Hunter Island	1,520,000
3	Van Cortlandt Park, Development of West Section	2,070,000
4	Riverdale Park, New Park Development	305,000
5	Crotona Park, Development of Old Borough Hall Section	335,000
6	Ferry Point Park, New Beach Development	1,620,000
7	Pelham Bay Park, Orchard Beach Improvement	750,000
8	Bronx Park, Northerly Section, New Swimming Pool	1,242,000
9	Bronx River Parkway Extension, New Parkway Development	7,000,000
10	Mosholu Parkway, Parkway Reconstruction	2,450,000
11	Bronx and Pelham Parkway, Parkway Reconstruction	3,800,000
12	Hutchinson River Parkway, New Gasoline Station	125,000
13	Bronx River Parkway, New Fencing	13,540
14	New Baseball Fields, West Farms Rd., S. of Tremont Ave.	27,600
15	New Playground, Bronx Park South & Boston Road	67,850
16	New Playground, Bronx Park, Southern Blvd. & 185th St.	33,400
17	New Playgrounds, Crotona Parkway Malls	98,600
18	New Playground, Wm. J. Deegan Blvd. & 134th St.	35,000
19	New Playground, Samuel H. Young Playground, Hutchinson River Parkway & Tremont Ave.	47,700
20	New Playground, Fulton Park, Fulton Ave., & E. 169th St.	44,000
21	New Playground, Pierce Ave., & Tenbroeck Ave.	62,550
22	New Playground, Cypress Ave., & Eastern Blvd.	42,400
23	New Playground, Van Cortlandt Park South	77,625
24	New Playground, Park Ave., & E. 151st St.	60,000
25	New Playground, Stebbins Ave., N. of E. 167th St.	37,000
26	New Playground, Dawson St., & Leggett Ave.	119,000
27	New Playground, Roger's Pl. & Dawson St.	37,000
28	New Playground, E. 156th St., & Courtlandt Ave.	43,500
29	New Playground, Zerega Ave., & Gleason Ave.	194,500
30	New Playground, St. Mary's Houses, 145th St. & Concord Ave.	25,000
31	New Playground, Morrisania Housing, Morris Ave., & 140th St.	40,000
32	Addition to Vincent Ciccarone Playground, E. 188th St. & Hughes Ave.	20,000
33	Reconstruction of Playground, Melrose Park, E. 161st St. & Cortlandt Pl.	31,800
34	New York Botanical Garden, New Construction & General Improvements	500,200
35	New York Zoological Society, New Construction & General Improvements	2,232,320
	Resurfacing Park Walks, Roads & Playgrounds	574,320
	TOTAL BRONX	$28,414,960

Queens

1	Flushing Meadow Park, New Park Development	$4,405,000
2	Kissena Corridor, New Park Development	2,768,625
3	Kissena Park, New Park Development	894,000
4	Alley Park, Development of North Section	1,736,720
5	Cunningham Park, Development of North Section	2,401,200
6	Clearview Park, New Beach Development	4,428,000
7	Jacob Riis Park, New Swimming Pool	378,000
8	Jacob Riis Park, Waterproofing & Repairing Buildings	96,220
9	Forest Park, Reconstruction of Park, West of Woodhaven Blvd.	324,000
10	Linden Park, Reconstruction of Park	121,000
11	Rockaway Beach, Improvement of Boardwalk	184,000
12	Conduit Blvd., New Parkway Construction	1,175,000
13	Belt Parkway, Parkway Widening	1,225,500
14	Brooklyn-Queens Connecting Highway, Highway Planting	240,000
15	Cross Island Parkway, Shore Erosion Control	175,000
16	New Baseball Fields, Baisley Pond Park	45,600
17	New Playground, 47th St. & 20th Ave.	64,150
18	New Playground, O'Donohue Park, Beach 9th St. & Beaumont Rd.	65,200
19	New Playground, 137th St. & 76th Ave.	65,750
20	New Playground, Beach 32nd St. & Rockaway Beach Boardwalk	46,650
21	New Playground, Merrick &Baisley Blvd.	56,200
22	New Playground, Richmond Park, Kissena Blvd. & Maple Ave.	50,900
23	New Playground, Onderdonk Ave. & Willoughby St.	36,050
24	New Playground, Hallets Cove Housing, Vernon Blvd. & 8th St.	155,000
25	New Playground, Francis Lewis Blvd. & Grand Central Parkway	12,500
26	Reconstructed Playground, Alley Park, Picnic Area	61,500
27	Resurfacing Grand Central Parkway, Horace Harding to Interborough Parkway	402,800
	Resurfacing Park Walks, Roads, Parkways & Playgrounds	324,380
	TOTAL QUEENS	$21,908,955

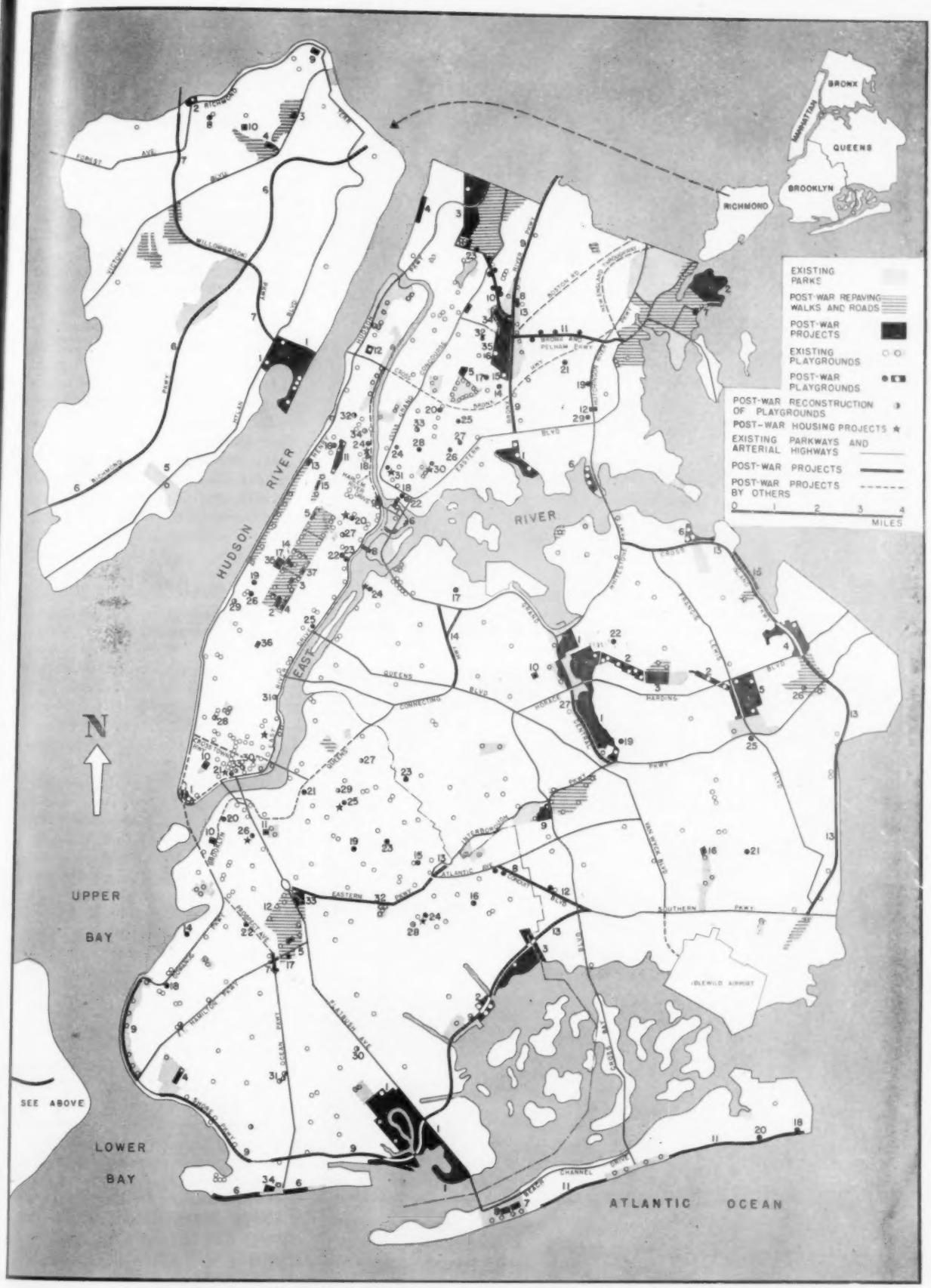
Richmond

1	Great Kills Park, New Park Development	$6,400,000
2	Faber Park, New Bulkhead Construction & Construction of Park	144,000
3	Silver Lake Park, New Bandshell	63,600
4	Clove Lakes Park, Waterproofing & Rewiring Administration Building	3,800
5	Wolfe's Pond Park, Studies	5,000
6	Richmond Parkway, New Parkway Construction	8,319,000
7	Willowbrook Parkway, New Parkway Construction	5,850,000
8	New Playground, Jewett & Castleton Aves.	21,200
9	Staten Island Institute of Arts & Sciences, New South Wing	40,000
10	Staten Island Zoological Society, New Construction & Improvements	81,350
	Resurfacing Park Walks, Roads, & Playgrounds	166,370
	TOTAL RICHMOND	$21,094,320

All-Borough Projects

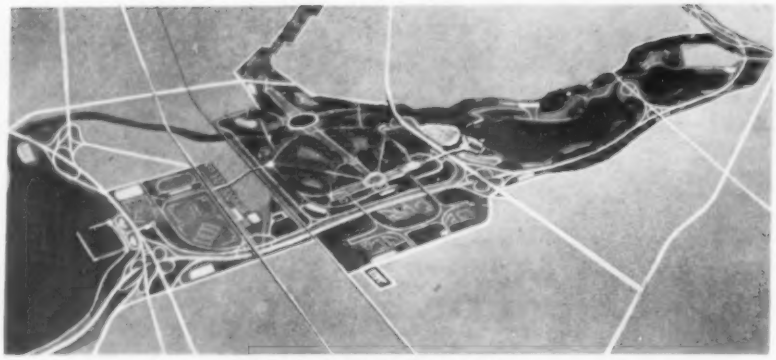
1	Swimming Pool Repairs	$55,000
2	Completing W. P. A. Projects	1,000,000
3	15 Public School Playgrounds	1,488,500
	TOTAL	$2,543,500

Grand Total $115,093,545



MAP OF NEW YORK CITY, SHOWING PARK DEPARTMENT'S POST-WAR WORKS PROGRAM

(To fit the page, the Borough of Richmond is shown at the upper left instead of lower left of the map.)



Flushing Meadow Park, Queens

Area in the Bronx showing Mosholu Parkway, Fordham Road, Bronx Park Botanical and Zoological Gardens, Bronx and Pelham Parkway, Bronx River Parkway, and Bronx Swimming Pool

Great Kills Park, Richmond

Jamaica Bay area showing Spring Creek Park, Carnarsie Beach Park, and Marine Park, Brooklyn and Idlewild Airport, O'Donohue Park, Rockaway Beach, and Jacob Riis Park, Queens. Portion of Shore Parkway Section of Belt Parkway in foreground

extensions will be limited, and that efforts will be directed to making what we have inherited more livable and attractive—as against abandoning it, letting trade and population drift away, and continuing a trend toward suburban dormitory living and commuting. We believe in limited objectives—that is, in reclaiming, rounding out, expanding, and developing what we have, in seeing to it that recreation is provided for in arterial, housing, school, sanitation, and other construction, and not regarded as an afterthought. Finally, we believe in adding new small parks and playgrounds in neglected sections.

We anticipate greatly increased interest in and demand for public recreation after the war. This demand will come from many sources, including the men now in the armed services who have become accustomed to strenuous exercises and outdoor life. People now working in war industries and otherwise associated with war work, who have very little leisure time, will require more recreation. The city park system must provide for their needs.

New and Better Parkways

As to proposed parkway improvements, we plan to reconstruct and extend the Bronx River Parkway from the Westchester County line to Eastern Boulevard. The portion of this parkway in Westchester County will also be reconstructed. State funds are available for construction and the plans are complete. Mosholu Parkway from Van Cortlandt Park to Bronx River Parkway, and Bronx and Pelham Parkway from Bronx River Parkway to Eastern Boulevard, are being replanned as the main east and west scenic drive across the Bronx with grade eliminations, service roads, new concrete pavement, playgrounds, and landscaped areas along the borders to serve the great apartment population on both sides.

The three great outlying buffer parks of northern New York City—Van Cortlandt, Bronx, and Pelham Bay—with their parkway connecting links constitute one of those miracles of late nineteenth century advance planning which we of today are too apt to take for granted. Those who had the foresight, courage, and tenacity to lift this conception from mere mapping to reality deserve our profound thanks. Probably the greatest credit belongs to John Mullaly who was secretary of the old Park Commission of the Bronx and who followed the interference of great commissioners like William White Niles to the goal. Our job now is to bring the conception

of these pioneers up to date, and it is astonishing to see how little additional land and right-of-way we need for the purpose.

With the assistance of the Port of New York Authority and the Borough President of Richmond, the Park Department has prepared preliminary plans for a complete parkway system in the Borough of Richmond, where there is still an opportunity to do a first-rate job without the compromises and restrictions which handicap us in the other boroughs. A main artery, Richmond Parkway, will run the length of the island from the proposed vehicular tunnel to Brooklyn at the north to the Outerbridge crossing on the south. Most of the right-of-way has already been acquired for Willowbrook Parkway, which will connect Bayonne Bridge at the northwest with the new Great Kills Park on the Lower Bay.

A third lane of pavement will be placed on all sections of the Belt Parkway in Brooklyn and Queens, where only two lanes now exist, making this a three-lane parkway throughout. All the more recent sections of this parkway were laid out for this additional lane; but on one stretch, known as Laurelton Parkway—built some years ago when six-lane parkways looked extravagant to budget experts—considerable changes, including major railroad adjustments, will have to be made as part o fthe old Southern-Rosedale elimination already planned by the use of state funds.

Mixed-Traffic Express Highways

Progress is also being made by various city agencies in the planning of a coordinated system of mixed-traffic express highways throughout the city. In some respects it is easier to provide continuous, uninterrupted travel for passenger cars than for trucks, buses, and other miscellaneous vehicles, all however constituting part of the same problem.

Detailed plans have been prepared for a low-level, pedestrian bridge from The Bronx to the completely developed Randall's Island and for a pedestrian lift bridge from Manhattan to the partially completed Ward's Island to improve access from the sections for which they were built.

Beaches and Pools

With the completion of various sewage-disposal plants, most of the waters surrounding the city will be clean enough for swimming, boating, and fishing. In Jamaica Bay, a great natural recreation area is being reclaimed.

Tentative plan for Aquarium Oceanarium, Coney Island, Brooklyn

At Canarsie a one-mile beach has been designed. In the Bronx at Ferry Point Park and in Queens at Clearview Park, similar beaches with all types of recreation areas will be built. Since it is impossible to provide bathing beaches for all parts of the city, swimming pools have been designed for Bronx Park and for Dyker Beach Park in Brooklyn. In addition, at Jacob Riis Park Beach, a pool is to be built adjacent to the bathhouse.

Wherever possible, some park use of lands acquired for sewage-disposal plants is agreed on with the Department of Public Works. At Owl's Head Park, Brooklyn, the deck over the tanks will be used for park and playground purposes. At the Tallman's Island plant in Queens, previously constructed, we now operate a 12-acre park built under similar circumstances.

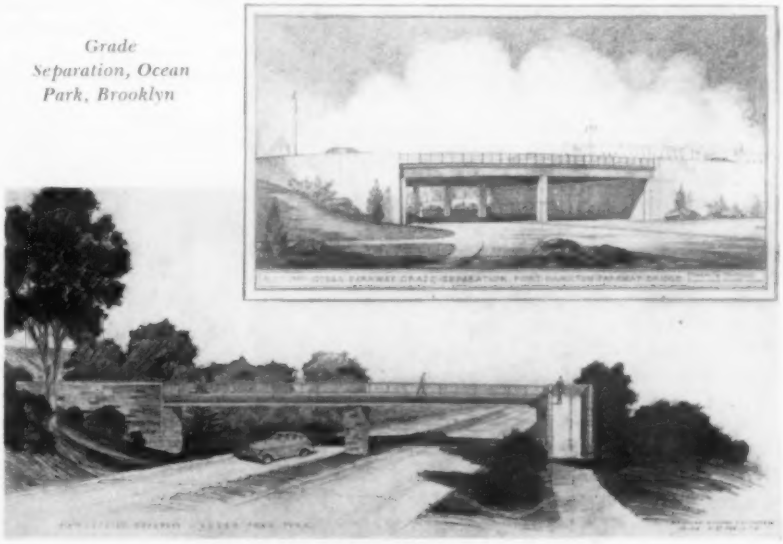
The use of small streets and parks between 52nd and 58th Streets along the East River Drive, has been so great that we have asked the Borough President of Manhattan to build a promenade between 52nd and 58th Streets, connecting these park areas. Most of the rights of access to this waterfront were retained by the original owners at the time the easement was taken for the construction of the Drive.

Recreational Facilities for Housing Projects

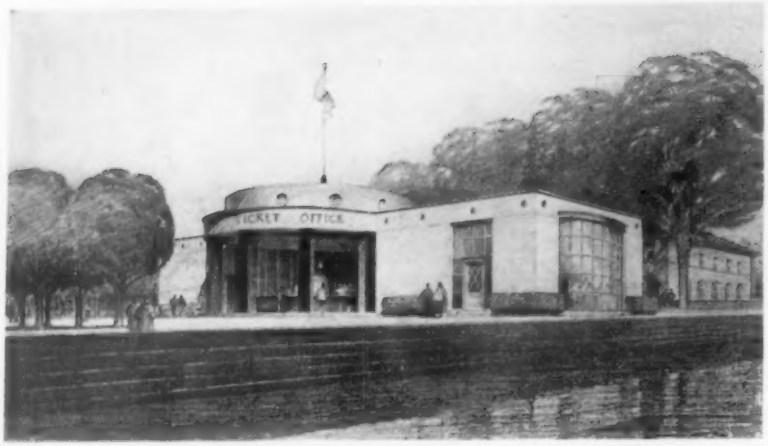
In connection with the ten new state public housing projects planned for post-war construction, recreation needs of the neighborhood as well as of the project residents will be taken care of as a part of the project. One of the best will be at Astoria Houses, Queens, on the East River at the end of Astoria Boulevard. Bulkhead reconstruction and extension will make room for complete recreational facilities.

Marine Park, Brooklyn, 1,792 acres, will have golf courses, boat basin, playgrounds, and general park areas. Great Kills Park, Richmond, 1,256 acres, will have a two-mile beach and

Grade Separation, Ocean Park, Brooklyn



Pedestrian Overpass, Alley Park, Queens



Concession Building and Ticket Office, Battery Park, Manhattan

complete facilities for recreation. This park and Soundview Park in the Bronx, 159 acres, will be built on land completely reclaimed, with the aid of the Department of Sanitation dumping operations.

Flushing Meadow Park, former World Fair site, is ready for completion and will supply complete facilities for this neighborhood. It is to be connected by Kissena Corridor with Kissena and Cunningham Parks, providing a continuous green strip 4½ miles long through the heart of Queens. Both Kissena and Cunningham Parks will have large areas reclaimed and reconstructed. Farther out in the borough, part of Alley Park is being reclaimed from swamp land.

In the Bronx, areas in both Van Cortlandt and Pelham Bay parks will be reconstructed and become more useful to both neighborhoods. Among the many old park areas to be rebuilt are Battery Park and City Hall Park. Coney Island and Rockaway beaches are to be further improved. Two million dollars will be spent on general park repair and rehabilitation.

94 New Playgrounds

The program provides plans for 94 new playgrounds and the reconstruction of 16 old ones in neglected parts of the city. Some will be operated jointly by the Board of Education and the Department of Parks at the sites of new schools. Some will be built in conjunction with the new housing developments planned by the New York City Housing Authority. Others will be built in congested districts throughout the city on properties acquired by purchase, condemnation, and foreclosure of tax liens. Upon completion of these new play areas, the Department will have 581 playgrounds in operation. There were 119 when we took charge in 1934.

Museums and Institutions

Most of the museums and institutions which in one way or another come under the wing of the Department of Parks are being replanned with funds contributed jointly by the city and the institutions. At the Metropolitan Museum of Art, there will be a complete rehabilitation and the Whitney Wing will be added on the south to house modern art. The American Museum of Natural History, including the Hayden Planetarium, will be completely modernized and expanded. Improvements are also planned at the Brooklyn Botanic Garden and New York Botanical Garden, the Staten Island Institute of Arts and Sciences, and the Staten Island Zoo. We shall have a modern barless zoo in the Bronx under the New York Zoological Society, a new aquarium "oceanarium" at Coney Island, a new Children's Museum in Brooklyn and improvements at the Brooklyn Museum itself, and additions to the New York Public Library facilitated by the removal of the central circulating branch into a new building.

The accompanying map indicates the location of these various projects.

Man Hours and Materials

We are today employing on this and other post-war work design most of the city's technical staffs and many able private consultants. Arrangements were made with the General Contractors' Association and large corporations vitally interested in the program, to study it and break it down to determine the number of man-hours involved and material and equipment required. In computing the man-hours, no attempt was made to go back of actual construction on the ground. In other words, the figure given does not include man-hours in the mines, factories, etc., to produce the materials involved. The program as presently conceived will require over 200,000,000 man-hours of labor, which will make a sizable dent in New York City's unemployment problem.

The jobs will require 400,000 tons of structural steel; 275,000 tons of reinforcing bars; 9,000,000 barrels of cement; 100,000,000 board feet of lumber; 6,000,000 cubic yards of crushed stone; 3,000,000 cubic yards of sand; 200,000,000 bricks; and tremendous quantities of other miscellaneous items such as go into major construction work. The production and transportation of this material will create employment not in New York City alone, but all over the country.

The scope of the program and its objectives may not be broad enough to satisfy academic planners. It will be too broad for the Citizens Budget Commission and for some other voluble associations of taxpayers. We believe however, that it will appeal to the average citizen who wants the city improved, wants men employed at useful work rather than at leaf-raking after the war, and is willing to pay the bill if the work is intelligently laid out and honestly executed.

Bathhouse and Concession Building, Great Kills Park, Richmond

A University's Service to Local and State Governments

By STEPHEN B. SWEENEY
Director, Institute of Local and State Government
University of Pennsylvania

IN 1936 plans were formulated at the University of Pennsylvania for providing direct services to Pennsylvania municipalities as part of a training program in local government administration. Many persons, among them Joseph H. Willits, then Dean of the Wharton School, and Samuel S. Fels, a prominent Philadelphian long interested in the improvement of municipal government, felt that this was a field of endeavor peculiarly fitted to a university. As a result of a generous gift by the Samuel S. Fels Fund, the fulfillment of these plans was made possible and the Institute of Local and State Government was organized July 1, 1937.

The primary purpose of the Institute is to strengthen American democracy at its source, the local governments. To improve the administrations of our local units would strengthen them to undertake functions they now relinquish and in so doing vitalize the entire structure of our political democracy. The objectives of the Institute stress the need of *helping local government officials do the job that is to be done*. It envisions its tasks as: (1) the training of young persons for future service as public officials, and the education of others in the fundamentals of democratic government so as to make them better citizens; (2) the providing of technical assistance and directly to local and state officials; and (3) the conducting of research on current problems of local and state government.

Training for Public Service

As the organization began to function, it was soon demonstrated that these three objectives are interdependent, not only as they have been progressively worked out by the Institute staff, but also as they affect the public official. The best method of training young persons for public service, once the academic ground work has been laid, is that of having them learn by doing. To accomplish this, they have been assigned to whatever service project the Institute is currently investigating, or they have been assigned to work in a governmental agency—work that in itself would be useful to the official concerned as well as to the student. Thus the service functions of the Institute and the field apprenticeships for the students each support the other. Supplementing these activities, the Library, as a center collecting and distributing information, contributes to their success and is itself helped by the practical contact.

In 1938 the Fels scholarships were instituted for graduate students of governmental administration. The formal and professional training was established on the graduate level because it was felt that if the student already has a broad background of academic education before his professional training, he will be able to synthesize in his future position knowledge, skill, and a broad humanitarianism. The Institute of Local and State Government strives to train not bureaucrats but able administrators, conscious of their responsibilities to the public and alive to the public interest and need. Classes in the various aspects of Public Administration are supplemented by work on a practical problem under the supervision of a local government official, and the course is climaxed by writing a thesis and serving an interneship in a government office. This combines academic theory with practical administration and the course subjects are also chosen to realize this end.

These courses in administration are being opened this year to Pennsylvania public officials who wish to enhance their usefulness. In-Service Scholarships in Government Administration will be awarded and will carry college credit for those courses completed.

Direct Service to Municipalities

Allied to the training program are the direct services performed by the Institute for various governmental units and research agencies. Typical of these is the work currently being done for the Philadelphia Planning Commission. A survey of planning materials was made and the Director was assisted in staff organization and specifications. In the past few years the Institute has emphasized the services performed for the smaller municipalities surrounding Philadelphia. These are the units that most need aid and its services to them are considered one of the major contributions of the Institute to improved governmental administration. In addition, they constitute an excellent laboratory where results may be determined. Surveys of finances, tax delinquency, insurance programs have been made for boroughs and townships. Annual reports have been written at the request of the local units. Ordinance indexes and filing systems have been installed. In addition, more ambitious administrative services are performed for larger units, notably Philadelphia.

Though research is one of its three main objectives, the Institute as an organization does not engage in academic research; that is, research unrelated to the direct and immediate needs of a specific unit of government. A body of materials, however, had been collected by the Institute Library to serve as a foundation for the activities of the Institute and for the use of public officials and other persons seriously interested in governmental administration. Furthermore, most of the research work of the Institute results in important indirect services for local and state governments through the issuance of reports on the administrative services performed.

By this program the Institute strives to strengthen democracy and help build a vital America better able to meet the challenge of our dynamic times.

A complete history of the Institute of Local and State Government, University of Pennsylvania, and a list of publications is in "Strengthening Democracy at the Roots, The Five Experimental Years of the University's New Service to Government," Institute of Local and State Government, 3437 Woodland Avenue, Philadelphia, Pa.

> We must plan the homes of the future in the setting of neighborhoods, neighborhoods in the setting of communities, communities in the setting of cities, cities in the setting of regional areas, of nations, and of the world economy.
>
> —C.-E. A. Winslow.

Block the Breakdowns Before They Start

J. O. CLEVENGER
Section Mgr., Industrial Dept.

W. W. McCULLOUGH
Maintenance Engineer

Westinghouse Electric and Manufacturing Company
East Pittsburgh, Pa.

Here are some considerations to keep in mind that will help keep those vitally needed electric motors in good condition through the critical and elusive period known as the "duration."

THE ideal motor-maintenance program aims at preventions of breakdowns, rather than at their repair. Maintenance involves competent, periodic, and systematic inspection strictly enforced. Records must be kept consistently and on the schedule selected.

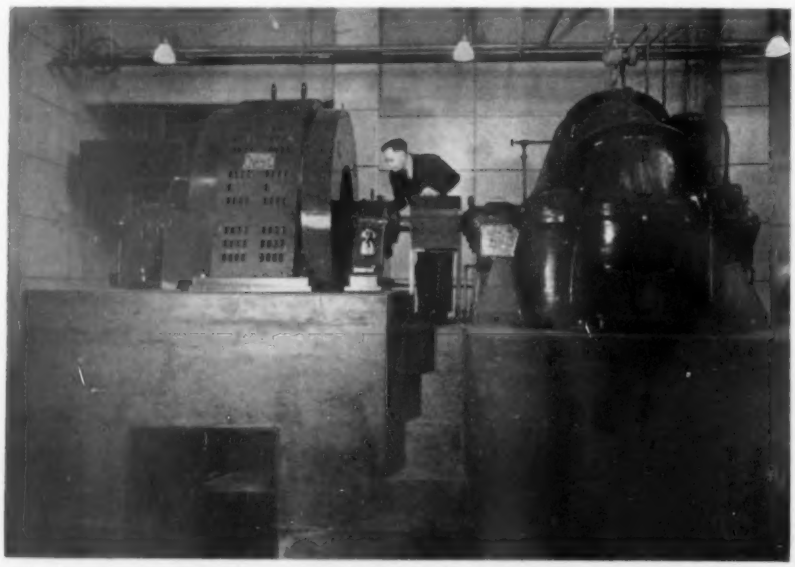
It is impossible to give any hard and fast rules for frequency of inspection. However, the following suggestions are based on average conditions found in municipally owned buildings.

Once a week check oil level in the bearings and see that the oil rings are moving freely. Check the temperature of the motor-bearings and primary iron with the hand. Sniff the warm air coming from open motors. The fumes emanating from overheated insulation are unmistakable.

Once a month check the brush holders, brushes, and shunts. Blow out the motor with compressed air.

Once a year check air gap with feeler gauge. Check insulation resistance with Megger. Check line voltage with voltmeter, and load with ammeter. Clean out and replace grease in ball-and-roller bearings. Check renewal-parts stock in light of the past years' experience.

Every two years dismantle the motor. See that all windings are tight. Replace loose wedges and loose bands before dipping in varnish and baking. Inspect commutators and commutator connections. Sleeve-bearings require no flushing. At intervals of about 2 years in average service, or during general overhaul periods, remove the bracket and wash out the bearing housing. Use hot kerosene oil and compressed air if available.



The important municipal servant such as this husky pump and motor combination, deserves particularly careful maintenance and inspection during these wartime days.

Bearings

Bearings probably cause more shutdowns, delay, and expense than any other cause. This is not surprising, when it is remembered that they are victims of poor foundations, misalignment, vibration, thrust from couplings, dirt under and over lubrication, and frequently the wrong lubricant. All this in addition to their real job of supporting a rapidly revolving part.

The first requirement of successful bearing operation is lubrication. This entails more than just an adequate supply of lubricant; the lubricant, the bearing design, and its condition must be correct.

Safe operating temperature for bearings under normal operating condition is considered to be 40° C rise above the surrounding room air. At this temperature a bearing feels only comfortably warm to the hand. Assuming proper mechanical condition of the bearing, either sleeve or ball, and the bearing assembly, and assuming that proper lubricants are used, temperatures elevated above 40° C rise call for immediate investigation.

In a sleeve-bearing the oil sticks to the shaft and is dragged along by the rotation of the shaft to form a wedge-shaped film between the shaft and the bearing. This film of oil carries the load and prevents metal-to-metal contact.

Oil and the Bearings

Two outstanding considerations govern the maintenance of sleeve-bearings. First, to insure the existence of the oil film once rotation has begun, *use the right oil.* The second, to minimize the destructive effects of metal-to-metal contact when the film is lost, either by accident or during the starting period, *use the right babbitt.*

For sleeve-bearings, proper maintenance keeps oil well filled to the proper level and the oil rings turning freely. New oil should be added only when the motor is at rest to prevent overfilling of the reservoir. Oiling of bearings is more often overdone than underdone. Sleeve-bearings which require frequent refilling and thereby leak oil onto the stator windings, should be replaced with sealed sleeve-type brackets and bearings.

Oil rings generally carry far more oil than is necessary for proper lubrication of the bearing. When running, most of this oil is carried on the outside diameter of the rings by centrifugal force. This excess oil causes splashing and spray inside of the bearing housing. Air currents that pass through the housing pick this spray up and deposit it on motor windings. Sealing the bearing against the entry of air currents is therefore necessary and is accomplished in all modern designs by close tolerances, felt seals, and air by-passes to effect blower action of rotating parts.

The purpose of the felt washer in these seals is often misunderstood. The real purpose of the felt is to keep out air and dirt. In itself it has little value for preventing leakage of oil once it becomes oil soaked. Bearing wear, which means radical movement of the shaft, spoils the effectiveness of the bearing seals. Replace all felt seals at the same time when replacing sleeve bearings.

Oil leakage is generally aggravated by high temperatures. Keep bearings cool and use an oil that does not foam easily.

Ball Bearings

Most ball-bearings used in horizontal motors are grease lubricated, although some supplied with vertical motors use oil. Follow the advice of the motor manufacturer in selecting a suitable grease. Carelessness in allowing containers to remain open often causes trouble from abrasive dirt. Soda-base soap greases are usually preferred on account of their high melting point and their stability. They mix readily with water, however, and tend to form an emulsion.

Eleven years of severe and continuous service showed a bearing wear of less than 15/10,000 inches—thanks to proper lubrication and intelligent maintenance. At this rate of wear, it is estimated that bearing replacement would not be necessary for at least 90 more years.

Watch Out for a Click

Ball-bearings in distress can usually be detected by undue heating or by unusual noise. Broken or nicked balls cause rapid destruction of the bearing. They can be detected by the "clicks."

If the conventional 40° C rise above the surrounding air is exceeded, look for an overfilled bearing, since the first result of overgreasing is heating, caused by churning of the grease. The general rule is that the housing should not be over half full. Clean the old grease from the bearing and from the housing once a year and replace it with new grease. Average service is assumed.

When you dismantle a machine, be sure to wrap the bearing carefully in clean cloth or paper to protect it from outside dirt. Remove all old grease from the housing and clean the housing and the bearing either in Stoddard solvent or in carbon tetrachloride. This is a difficult operation because particles of grit are not soluble and are removed with difficulty. Remove final residue of cleaning medium with a light oil before filling with new grease. The container with fresh grease must be carefully protected from dirt. Keep the cover on tight.

Keep Equipment Clean and Dry

The importance of keeping electrical equipment clean and dry is always worth stressing. Accumulations of dust and dirt not only contribute to insulation breakdown, but they operate to increase the motor temperature through restrictions of ventilation. Dust and dirt is effectively removed with compressed air at about 50 pounds pressure. Do not direct compressed air against the insulation until certain that it is free from moisture that may have accumulated in the air line from condensation. Too great an air pressure may loosen the binding tape or injure the insulation by sand-blasting with the abrasive dirt which is nearly always present. If the accumulation of dirt contains oil or grease, a solvent will usually be required to remove it.

There are three type of solvents in general use for this purpose. These are petroleum distillates, such as Stoddard solvent or Cleaners' naptha, carbon tetrachloride, and a mixture of the two. The petroleum distillates are the solvents having the least corrosive action on insulation varnishes, and for that reason where conditions permit are preferable to the others. The Stoddard type solvent, produced by all the major oil companies, with a maximum flash point of 100° F, minimizes the fire hazard, and should be used in preference to gasoline or benzene. Every precaution should be taken, however, to prevent fires or explosions.

A thorough maintenance program does not neglect brushes. Proper method of cleaning and surfacing is to press brush down in a strip of sandpaper, placed between brush and commutator. Several passes are sufficient, depending on brush condition. The sand paper should be held flat against the commutator surface to prevent rounding the brush end.

Before any solvent is used, be sure that there is good ventilation and minimum fire risk. Do not let the workers' clothing become saturated with the solvent. Always have fire extinguishers of the carbon tetrachloride type handy. If a hose is used to spray either cleaning solution or varnishes, make sure that the nozzle is grounded. Workmen should be guarded against breathing the fumes of carbon tetrachloride, and they should be under the close observation of some one familiar with artificial respiration. Where conditions are particularly bad, such as in pits, gas masks should be worn.

When to Varnish

The time to apply varnish treatment is after the motor has been thoroughly cleaned in solvent. Use a baking varnish recommended by the supplier for the particular conditions encountered. Two dips and bakes may be sufficient for normal conditions, while for extreme conditions of moisture and corrosive gases four dips and bakes may be justified. One or two additional coats of red synthetic enamel may be justified under extreme conditions.

Dry the motor in an oven before dipping in varnish. Electric or steam heat is the safest and most convenient. The maximum dry-out temperature should not be greater than 115° C.

Property Taxes and Municipal Economies

To the Editor of THE AMERICAN CITY:

In THE AMERICAN CITY for October, Prof. Edwin H. Spengler suggests "the abandonment of the tax on capital values of real estate and the introduction of a series of local taxes adjusted to the changing patterns of urban life."

Prof. Harry Gunnison Brown in his comments on the Treasury Department's Committee report on "Municipal Financial Problems and the General Property Tax," which was the subject of Professor Spengler's article, says:

"If the expenses of our governments are necessarily greater than can be provided for by the absolutely most desirable taxes, we may at least strive to use the less desirable ones as little as possible and the least desirable not at all. The tax on buildings is indeed likely to be burdensome. But the tax on site values could yield much more than it now yields; and if it were so used we could abolish or at least greatly reduce the burden on real estate improvements of all kinds without resorting to the more undesirable taxes to anything like the degree often assumed.

"A site-value tax does not penalize efficiency in serving the community. It does not discourage the accumulation of capital or drive capital to other jurisdictions."

I think Professor Brown is right in his conclusions. It seems that most of the complaint against the tax on real estate arises from excessive spending and because of unequal assessments. When a tax is very light, great inequalities in assessing attract little attention; but when the tax is heavy, assessors are slow to reduce excessive assessments and inequalities become too grievous to be borne.

There is another complaint, not referred to by Dr. Brown or Dr. Spengler, which is common. It is assumed that assessments on capital value are not and cannot be based on income, actual or potential. This belief is erroneous. It may be true that some assessors are copyists, not appraisers.

Every competent appraiser considers actual present income when he can ascertain it, and in any event potential income. A parcel of real estate is worth the capitalized value of what it can be made to earn. There may be reason to believe that in the near future it can earn more than now. If so it may be worth more than its present earnings would justify. On the other hand earnings may be likely to decline, and its present value may be less than if earnings are deemed stable.

In any event the value of land improved or unimproved depends on earning power, present or potential.

If more people knew this, fewer would buy vacant lots that have no chance of earning a cent in fifty years.

Excessive spending calls for the best possible assessing. Limitations in tax rates cause pressure on assessors to make excessive assessments. Excessive spending should be curbed.

Many persons who demand more money for purposes they deem worthy, refuse to consider that cities, like men, should live within their means. Cities and towns differ in wealth to a degree few realize.

The State Tax Commission of New York publishes an excellent report. From the report for 1939, I give as examples two poor counties and two rich ones, stating the assessed value of real estate and the full value per capita.

PER CAPITA AVERAGES

County—	Assessed Value	Full Value	Tax Levy
Washington	$ 660	$ 940	$ 38
Ulster	793	1,586	38
Nassau	3,730	4,700	102
Westchester	3,107	3,610	105

The difference between towns is greater than between counties. The richest town is Scarsdale with $8,100 of real estate per capita. The tax levy of Scarsdale is $184 per capita. That is less of a burden than Washington County bears with a tax levy of $38.

In general the State of New York and its municipalities have had delusions of grandeur in the last thirty years.

The cost per pupil for education in the whole state in 1910 was $45, and in 1939, $175. Note that the increase had nothing to do with increase of population. Population of the state from 1910 to 1939 increased from 9,113,000 to 12,588,000. That is a little more than one-third. The general property tax levies increased from 278 millions to 823 millions. Total state and local taxes increased from 334 millions in 1913 to 1,317 millions in 1939.

The federal governments must take an enormous sum. It is time for state and local government to spend according to their means and not according to their appetite.

LAWSON PURDY,
(Former President, Department of Taxes and Assessments, City of New York.)

MOPEY DICK AND THE DUKE
"Don't bother to improve our property, Duke—we'll only have to pay higher taxes."

CARTOON BY COURTESY OF THE NEW YORK WORLD-TELEGRAM

To Debunk False Land "Values"

THROUGH the courtesy of Leslie M. Perrott, architect, of Melbourne, THE AMERICAN CITY has received a reprint of an interesting address on "National Reconstruction and Housing," delivered by F. Oswald Barnett at the recent annual meeting of the Town and Country Planning Association of Victoria. That Australian cities are struggling with problems all too familiar to American cities, the following excerpts indicate:

"When we come to replanning Melbourne we shall find that we have to debunk land values, and I think it can be done very simply.

"The first big step is the matter of zoning. We must take away from all residential land any prospective value as a factory site. People will hold on to a slum for generations in the hope of somebody buying it one day as a factory site, but as soon as we zone, we immediately take away false prospective values.

"To some extent the same thing often applies to residential values. I think we will have to zone all residential areas into flat [apartment house] areas and villa or cottage areas (a single house value) so that people in the latter will not say, 'I am in a good spot. If I hang on long enough somebody will want to build flats here, so I will keep this small allotment until such time as I can make something worth while from the unearned increment.' I think we will have to be scientific in our zoning."

"Then I also feel this—that cost is not the only thing to be considered. When we are used to spending £1,000 a minute at the present juncture, I do not think that any of us could be persuaded that cost is a thing we cannot face in the future. Of course, a great deal of taxation will be retained, and I cannot conceive of a better use being made of some of that taxation than facing this devaluation of land, and so settling this problem once and forever. As a matter of fact, I feel that the federal government would be prepared to consider such a proposal, as this:

We are acquiring some acres of land in an inner suburb. The lowest valuation at which we can under the present system obtain that land would be about £5,000 per acre. We still assume there is a certain number of childless couples, bachelor men, bachelor women, and married people without children who want flats; the rest want cottages. Now, £5,000 per acre would make the cost of land for a cottage, £625. On the Commission, we think that the full value for land that a cottage should be asked to carry is in the neighborhood of £125, and we suggest that the federal authorities should assume the responsibility of that extra £500 and say, 'We will take that burden off your hands and we will liquidate it as a social gesture.' Indeed, that would not be such a tremendously extravagant thing to do. As a matter of fact, it is estimated that to do that scientifically throughout the whole of Australia would not cost £3,000,000 a year. At present, I think we are spending £3,000,000 in less than two days, and if we cannot spare that to get back to sanity and scientific planning, if we are always going to be browbeaten by the bugbear, 'It is too dear—you could not house people there, forget it. Put them out in the outer suburbs somewhere,' then our talk of a New Order is sheer nonsense, and our conception of rehabilitating the workers is but a sluggard's dream."

Mr. Perrott also sends a copy of the *Journal* of the Royal Victorian Institute of Architects containing a well-illustrated discussion of "Planned Future Development for the Borough of Swan Hill." The article shows how that Australian borough is leading the way to scientific town development with the advice of its architect and town planner, Frank Heath. Well-planned neighborhood units give distinction to this plan. The design for one of these units, in contrast to a typical existing Melbourne suburban development, is here reproduced.

AREA	190 ACRES
LENGTH OF STREETS	30,830 FEET
LENGTH OF FOOTPATHS	81,320 FEET
FRONTAGE OF SHOPS	3,000 FEET
SQUARAGE OF OPEN SPACE	6 ACRES
PUBLIC OPEN SPACE (Including Roads)	4 ACRES
COMMUNITY CENTRE	NIL
SCHOOL	2 ACRES
DWELLING UNITS	600 ACRES

Typical section of existing development of any suburb of Melbourne

AREA	190 ACRES
LENGTH OF STREETS	18,950 FEET
LENGTH OF FOOTPATHS	57,552 FEET
FRONTAGE OF SHOPS	904 FEET
SQUARAGE OF OPEN SPACE	22.3 ACRES
PUBLIC OPEN SPACE (Including Roads)	14.3 ACRES
COMMUNITY CENTRE	4.5 ACRES
SCHOOL	8.3 ACRES
DWELLING UNITS	600 ACRES

Neighborhood unit planning as proposed for the Borough of Swan Hill

Factory-Built Houses an Urban Threat

But Foresight May Bring Big Benefits from Prefabrication

By Albert Charles Schweizer*

MODERN techniques in house building present a potential threat to our cities. The danger lies in the factory method of production, or rather in the application of that system to houses as it has been applied to the automobile. Automobile sales policies have been based on fashion appeal. Autos are not built for longevity. The makers are more concerned with getting cars into the scrap heaps to make way for new sales of new models than they are of creating a durable investment. Fortunately, automobile graveyards are usually in out-of-the-way places to which the cars can be carted when their span of life is over.

Were houses built on the same principle, to fall to pieces after a brief term of years, results would be more tragic. It is, of course, much worse to live in a wreck than to have to drive in one occasionally. And jaloppy houses cannot be driven or dragged off as readily to out-of-the-way junk heaps. Left on their sites they become eyesores and start their neighborhoods on the way to becoming slums.

Prefabrication or other factory form of production will naturally tend toward a non-permanent product. Cheapness will be an important factor in overcoming resistance to this new product. And cheapness will encourage the use both of unsubstantial materials and easy, weak articulation. Even in the better grades of structure there will be an understandable tendency to lighten the handling and shipping weight, with a consequent reduction in thicknesses and strength of members.

Houses That Will Not "Grow Old Gracefully"

Such an unsubstantial structure will not encourage the effort at repair found even in many of the less expensive houses of today. There will be a tendency to get the maximum of maintenance. There is prospect of a house trade-in practice, probably not on the one-year basis found so generally in the case of cars. Moving will present some inconvenience, though not enough to prevent fairly frequent change. This means less responsible ownership.

Another tendency which must be expected in factory-produced buildings is that of extreme economy of space. Undoubtedly they will be much more efficient than present custom-built homes of the same class. They can be more carefully planned for utilization of space due to economies of mass design. There will be a strong compulsion to reduce dimensions to a minimum for conservation of materials in cheap lines and for ease of handling and transportation in all types.

Such space economy will not make for more gracious living in the home. And smaller floor area will make it possible to put these structures on smaller plots. Unless precautions are taken to forestall huddling, there may be an overcrowding approaching that produced in the small house sections of some cities by the ground-rent system.

The picture of an area crowded with cheap factory-produced homes a few years after erection is not a pleasant one to contemplate. Apart from decrepitude, there will probably be added the fault that someone has pointed out as characteristic of too many modern materials: they "will not grow old gracefully."

Possibilities of Prefabrication

This pessimistic view of the possible unpleasant effects of widespread use of prefabricated or other factory-built houses will not and should not be a deterrent to their development. We must assume that many of the mass production structures will be sightly and substantial. As for the others, we cannot take them for granted. Their adoption after the war may be quite rapid, as many sizable firms, with capital to spend for promotion and large plant facility which will be released from war production, are making their plans to go into this field. With foresight we may prevent their being another evil visited upon cities.

One way of preventing the blighting of areas by these unsubstantial structures is to exercise some control of obsolescence. And this may apply as well to houses built by the normal methods of today. There is a growing feeling that buildings which have outlived their usefulness should be razed. This is markedly recognized in England where the Uthwatt Report recommends compulsory demolition. It might be regulated by the terms of financing the house purchase, or by leasing the structure for the term of its natural life. The same result might be achieved in connection with the sale of the land by the application of a deed restriction for the protection of the neighborhood.

Obsolescence and Demolition

Control of the evils of obsolescence should be possible through legislation. Unfit houses are one of the elements of blight. As such they contribute to the lowering of value of property. Consequently, the tax return is lessened and the community is justified in taking steps to require demolition. Such legislation may take time to develop and involve extension of currently acceptable limitations to police powers.

It is normal business procedure to write off a certain percentage of the investment in a building annually for depreciation. Mandatory demolition would be putting such an amortization on a more accurate basis. Allowance, therefor could be made in the price and should not work undue hardship, since its absorption in the cost would still produce a great saving over permanent types of construction. Cost of demolition should not be too great, and considerable salvage value might be reclaimed, perhaps enough to cover demolition costs. Houses might be factory-rebuilt under certain conditions.

One practical difficulty in carrying out mandatory demolition might be the determination of the useful life span of such a home. Obviously, there would be considerable range in the period of usefulness of different types of non-permanent houses. This would indicate the need of classification of such structures. Materials and construction would have to be standardized, or capable of inspection and testing, to determine classification accord-

* The author of this article, formerly Principal Planning Technician of the National Resources Planning Board, is also co-author of "Action For Cities," abstracted on pages 60-61 of the November issue of The American City.

ng to allowable length of life. Some form of licensing and periodic inspection might take the place of the building permit system used for permanent buildings. Structures reaching obsolescence before the established date should be liable to condemnation. Compensation of loss to the owner might be covered by guarantees from the manufacturer.

Protection of the neighborhood by such action would have another effect: there would be the inducement for the manufacturer to protect his guarantee by selling only a well-fabricated product (within the limits of its class).

To Insure Proper Maintenance

There will be a problem in insuring proper maintenance toward the end of the life of the building. This may be handled through municipal inspection or the terms of contract between owner and manufacturer as a safeguard to the latter's guarantee. It might also be possible on application and after inspection to grant an extension of life to a non-permanent house beyond its established term. Such extension would probably be limited and would have to be carefully guarded against abuse and consequent laxity in the enforcement of mandatory demolition.

As an improved planning instrument, consideration should be given to demolition by areas rather than by ndividual buildings. Such a provision would allow reconstruction on a broader scale and the possible change in land use to the advantage of the community. It would be particularly valuable as an aid in salvaging deteriorated neighborhoods.

Zoning and Architectural Control

Obsolescence has been dwelt on because it is a factor which would be particularly noticeable in a large percentage of factory-built houses. Overcrowding could be controlled by antinuisance ordinances. Finally, there should be some protection of the community against bad architectural design, a definite need in most localities for all kinds of buildings.

By taking suitable measures to guarantee decent construction and acceptable design, and to safeguard the community against the evils of obsolescence and crowding, the indications are that this form of building will be so much cheaper than equivalent permanent houses that it will bring many more of the low-income groups into the home-owner class. And with technological advances it may not be very many years before a fairly permanent house may be produced, at a reasonable price, on the factory assembly line.

Art Aids Civics in Detroit Schools

This is a design of a neighborhood development which includes war plants and businesses; a church, school, and recreation area; and low-cost houses for the war workers and their families. The designers are intermediate school boys.

MISS MABEL ARBUCKLE, Director of Art Education for the Detroit Public Schools, has written an extremely interesting article, entitled, "Art Serves the Community," which appears in the November issue of *The School Executive*. To many of us—remembering our own "art" classes, which largely consisted of painstaking drawings of pinch bottles and the proverbial bust of Caesar—this account is one more evidence that human progress has not stopped. To quote:

"The total art program in Detroit, gives recognition to the urgency of war interests and needs in all areas of living for the individual, family, community, and nation.

"The program is flexible and conditioned to changing local needs and national programs. Currently the program for the early and late elementary grades, the intermediate grades, and the high schools is organized around seven areas, as follows:

1. Housing and Civic Planning
2. Nutrition and Victory Gardens
3. Visual Publicity and Information
4. Aviation
5. Detroit War Industries; Work and Workers
6. Art of Other Nations
7. Crafts for Service and Recreation

Of special interest to readers of THE AMERICAN CITY is the first area, Housing and Civic, about which Miss Arbuckle writes:

"Art education is vitally concerned in understanding and supporting this program of which there are three organized phases, i.e., the metropolitan area, the civic area, and housing for both group and individual family life. The Huron-Clinton Metropolitan Authority, the City Planning Commission, and the Detroit Housing Council are the three agencies officially concerned with the program for improving metropolitan Detroit. The executive secretaries of these commissions have cooperated with the schools through a series of illustrated lectures, distribution of annual report publications and other reference and illustrative material. Comprehensive exhibitions in the Detroit Institute of Arts have inspired, clarified, and brought the schools up to date on the activities of the three commissions.

"Groups and individuals in the housing unit have developed maps, illustrations, dioramas, layouts for community centers in flat design or miniature three-dimensional construction. They have carried on crafts projects such as constructing unit furniture, weaving and designing fabrics, working metal and making pottery."

Miss Arbuckle further explains that in the Detroit School system, "fine arts" and crafts are not differentiated, but are one and the same thing:

"The art laboratories in every school are provided with tools for woodwork, carving, modeling, plastic and leather work, weaving and textile design, painting and drawing. The equipment includes woodworking benches, sewing machines, electric plates and irons, and looms. Supplies include clay, plaster-of-paris, wood, textiles, weaving supplies, raffia and reed, plastics, metals, paints, crayons, colored chalk, paper by the ream and by the rool, dyes, leather, glazes. Kilns, located in the secondary schools, service the elementary schools in the area."

Local Government Is News—34

Annual Reports—for Post War

By PHILLIPS BRADLEY

AS December rolls around again, most City Halls are busy with their annual reports to the community stockholders—the citizens. Whatever interim activities in public relations may go on the year around, the end of the fiscal or calendar year means special pressure to get out an overall accounting—for services as well as funds. The year-end job is the keystone on which every public-relations program ultimately rests; the annual report remains the major if not the only comprehensive record of the year's activities.

Two years ago, this column reviewed some of the ways of making City Hall's annual report more interesting to the citizens—and so, more widely read. Last year, the impact of the war was emphasized. Today, the need—and the opportunity—of bringing home the ends and means of post-war reconstruction to its citizens presents a challenge to the compilers of City Hall's annual report for 1943. How shall we set about making our communities conscious of City Hall's plans and progress toward post-war improvements in the reports they will be reading in 1944?

Some Rules Always Ring True

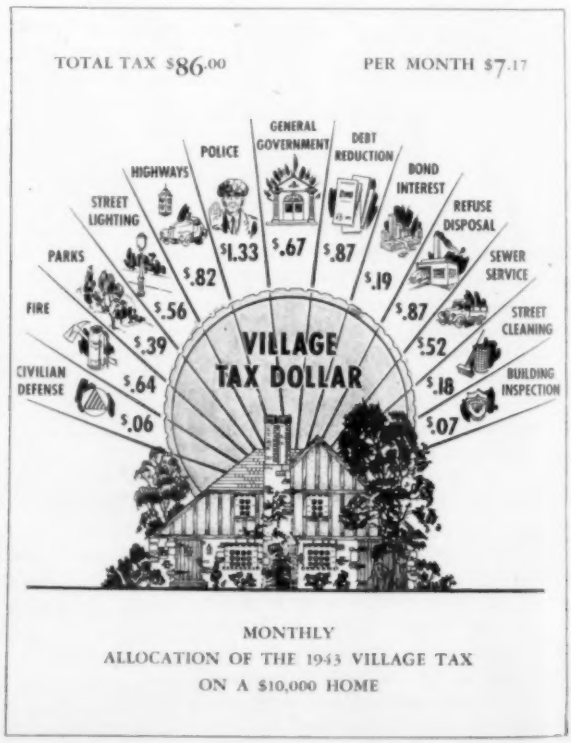
Good reporting practice does not change with the times; how sound principles will be utilized may some times be determined by the emphasis desired. If post-war reconstruction is to be the theme—and it is none too soon to be directing our citizens' attention that way—some of the old rules of good reporting are worth recalling. They are useful guides to the best ways of making City Hall's post-war blueprints interesting—and intelligible—to the community.

As has often been emphasized here, figures should be converted into pictures — graphs, charts, pictograms. Whether it is pennies or millions, miles of streets or square yards of paving, gallons of water or tons of garbage, numbers of arrests or property values lost—or saved—in fires, causes of accidents or of diseases, the record will "click" in pictures. Statistics don't need to lie—but they are generally pretty dull. Few will take the trouble to wade through a mass of figures to find out what they really mean, or even to assimilate them at all. Turn them into animated pictures and readers will multiply many times. Summaries of detailed statistical records, and especially of the financial accounts, may

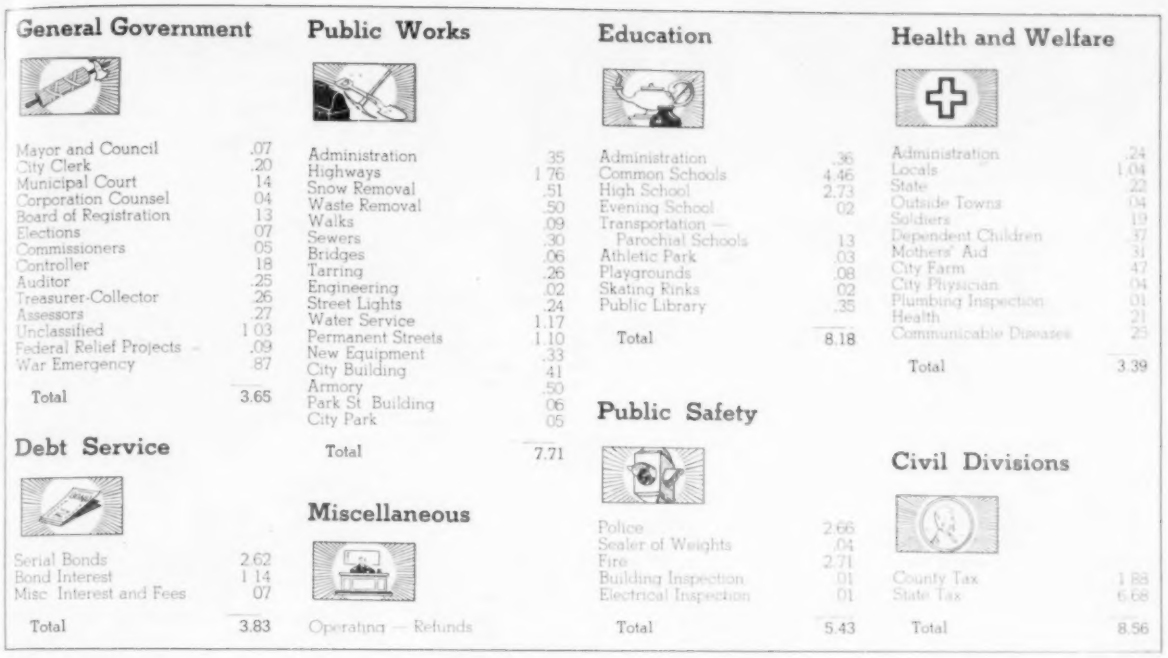
DISTRIBUTION OF LAND AREA
WITHIN CITY LIMITS
CITY OF NEW HAVEN
RESIDENCE 31.5 %
STREET 15.5 %
PARK, PLAY-GROUND 12.0 %
YALE UNIVERSITY 9.1 %
BUSINESS 4.8 %
RAILROAD 4.6 %
GOVERNMENTAL 4.5 %
INDUSTRY 3.9 %
CHURCHES, CEMETERIES 1.9 %
PUBLIC WELFARE 0.8 %
UNDEVELOPED 11.4 %
Each Disc Represents 200 Acres
Total Land Area = 11,445 Acres
PREPARED BY THE CITY PLAN DEPARTMENT NEW HAVEN CONNECTICUT

LEFT—*The New Haven City Plan Department presents graphically the city's land area distribution.*

BELOW—*Garden City, N. Y., tells citizens how the village tax dollar is spent.*



MONTHLY
ALLOCATION OF THE 1943 VILLAGE TAX
ON A $10,000 HOME



Per capita costs of municipal activities in Lewiston, Maine.

well mean that more people will understand how their taxes are spent—and grouse less about the high cost of good government.

A second sound rule of good reporting is to portray a running record, not just a single year's results. A five-year period is none too long; in some fields, even longer comparisons will prove helpful to the interested citizen in understanding City Hall's programs. Graphing the trends in operating costs, services rendered, administrative activities, will do much to enlist intelligent response to the programs themselves.

Third, an attractive format will do much to increase the readability—and, therefore, the reading—of the annual report. A cover which "compels" attention will get even a sizable report off to a good start. Well-designed typography costs little or no more than a routine job; it will help to retain reader interest because it is easy to read. Strategic use of pictures—especially of the before-and-after type—will bring home the progress City Hall has made in the social as well as the construction services. Break-up of solidly printed pages by the use of different type points or of subheadings will make the report more effective. A well-constructed chart of the local government, coupled with a directory of the major officials at City Hall, and how to reach them (office hours, addresses, etc.), will bring the citizen closer to his board of directors—the administrators of the municipal government.

Focusing on 1944

If 1943 is the end of the beginning, 1944 should be the beginning of the end. For City Halls all over the country, the end of the war will mean a renewed activity in practically every department. Post-war reconstruction is already in the blueprint stage in most; in some, it is already in the pilot stage. Nothing is more important to the average citizen than to know the why, the how, and the what of his city's post-war plans. This year is not too soon to take him into the confidence of City Hall, to make him aware of—and so share in—the development and the application of those plans. This year's annual report is the best possible medium for achieving that objective.

A well-conceived and designed report, constructed according to the tested rules for good reporting, will do much to enlist interest and response. Some special emphasis in the report will, however, help to highlight the outlines of post-war problems and programs. The easiest, and perhaps the most dramatic, field is public works. Some previews of existing "shelves" in the various departments, and plans for expanding them, will be viewed with interest by every citizen. Progress toward an overall city plan, integrating its many facets, will serve as a first-rate educational device in raising the community's sights to "no little plans" for post war.

Not less important, however, are the programs being developed by the manifold social services centered at City Hall—schools, parks, and playgrounds, health and welfare, child care and juvenile aid. Here and in City Hall's other social services lie some of the greatest challenges to imaginative and constructive planning for better urban life in the days of peace. It is not too soon to be laying those plans in 1944—and to be presenting them to the community in this year's report. In that way City Hall can point to its record most effectively and insure the support it will need for turning the blueprints into reality. Now is the time to plan—and to make the plan come alive in graphic form in this year's report.

Winston Churchill Urges Post-War Planning and Housing

Just as in time of peace, plans for war and measures for defense ought to be at readiness in every prudent state for a sudden emergency, so in time of war we must make sure that confusion and chaos do not follow the victories of the armies or stultify the surrender, unexpectedly early, by the enemy . .

The policy of waging war till victory would be incomplete and, indeed, spoiled if it were not accompanied by a policy of food, work, and homes in the period following the victory for the men and the women who fought and won.

—From the Prime Minister's address at the Lord Mayor's luncheon, in London, November 9, 1943.

Quotable Thoughts
for your Talks and Reports

Installment No. 9 of a Department of Ideas, Old and New, for Public Speakers and Report Writers.

An American of the Best Tradition

He is an American, no matter what his race or color may be, who scatters the seeds and fosters the perpetually maturing life of democracy with its ripening fruits of liberty, equality, justice, brotherhood, and peace; whose own self-interest is identical with the common interest of all; whose house of today is built upon the treasured principles and experiences of the tested past and lighted by the radiant lamps of his vision of a more perfect future; whose horizons encompass all mankind, even the most lowly; whose heart throbs in understanding sympathy with the struggles and aspirations of humanity in all its vicissitudes; who gathers inspiration from the heights and translates it into beauty and influence and achievement in his daily task; whose life grows rich from strenuous service and finds its rest in creative work; who in transcendent humility hews new pathways to a better world and a more abundant living; who beholds in the American flag the lofty symbol of his ideals, his hope, and his faith; and whose devotion to truth, to America, to humanity—to God—is a devotion without end. He is an American.

ARNOLD J. LIEN,
Washington University, St. Louis.

The common problem, yours, mine, everyone's,
Is—not to fancy what were fair in life
Provided it could be,—but, finding first
What may be, then find how to make it fair
Up to our means.

—ROBERT BROWNING

A Great Entail

God has let us the earth for our life. It is a great entail. It belongs as much to those who are to come after us and whose names are already written in the Book of Creation as to us; and we have no right, by anything we do or neglect, to involve them in any unnecessary penalties, or to deprive them of the benefits which were in our power to bequeath.

JOHN RUSKIN

An honest tale speeds best being plainly told.—WILLIAM SHAKESPEARE

In Days to Come

There will come a time when it will seem as senseless and cruel to permit any child to grow up without adequate nutrition as the jailing of insane people a century ago now seems to us. In fact worse—for many of the insane were unfitted ever to function in society, whereas the nation's children are its greatest potential asset. On their physical and technical skills, on their intelligence and imagination, depends the nation's future.—JAMES B. CAREY.

To Do the Thing You Have to Do

Perhaps the most valuable result of all education is the ability to make yourself do the thing you have to do, when it ought to be done, whether you like it or not; it is the first lesson that ought to be learned; and however early a man's training begins, it is probably the last lesson that he learns thoroughly.

THOMAS HENRY HUXLEY

"Prepare Ye a Way"

And they shall build the old wastes;
They shall raise up the former desolations
And they shall repair the waste cities.
Go through! Go through to the gates!
Prepare ye a way for the people,
Raise up a standard for the people!
And thy name shall be known,
O city on the hill,
As the city sought out—
The city not forsaken!

—Based on passages in the
PROPHET ISAIAH

There is no cure for birth or death save to enjoy the interval.—GEORGE SANTAYANA.

Practical Politics

The effectiveness of public administration in a democracy is largely fixed by the practices and ideals which prevail in the wards and divisions of our centers of population. Only in autocracies are such determinations made at the top. The liberal dilettante may fume and fret, but forget the practical ward politician at your peril!

—MORRIS LLEWELLYN COOKE

Without justice we can have no guarantee of permanent peace. With justice the peace of the world is unassailable.—LORD COURTNEY, English Statesman.

Discussion Groups

Democracy, if it is to survive and thrive in a country as large as ours, needs discussion groups far more than it ever did before. . . .

Social changes are now occurring so rapidly that by the time children grow up the education they received is out-of-date in many vital particulars. The only way that adults can keep up with events is by continually educating themselves. This education is most effective when it is informal, as in case of the informal discussion group. The highest type of group morale is that which is based on democratic understanding, cooperation, and participation. These goals can be attained more readily by discussion groups democratically conducted, than by any other method.

EMORY S. BOGARDUS
(in *"Democracy by Discussion"*)

Preserving a Free Government

A people may prefer a free government, but if, from indolence, or carelessness, or cowardice, or want of public spirit, they are unequal to the exertions necessary for preserving it; if they will not fight for it when it is directly attacked; if they can be deluded by the artifices used to cheat them out of it; if by momentary discouragement or temporary panic, or a fit of enthusiasm for an individual, they can be induced to lay their liberties at the feet even of a great man, or trust him with powers which enable him to subvert their institutions; in all these cases they are more or less unfit for liberty; and though it may be for their good to have had it even for a short time, they are unlikely long to enjoy it.

JOHN STUART MILL

Molding the Future

Great economic and social forces flow with a tidal sweep over communities that are only half conscious of that which is befalling them. Wise statesmen are those who foresee what time is thus bringing, and endeavor to shape institutions and to mold men's thought and purpose in accordance with the change that is silently surrounding them.

VISCOUNT MORLEY

Everything is unknown about the future save this alone: if the American idea prevails the future will offer man some dignity and some chance for self-improvement. . . . And the American idea cannot be saved by the sword alone; it can only exist if we live it.

HERBERT AGAR

For the leaders of a democracy at war to concern themselves with the purpose of victory as well as with the means to victory is not a diversion of effort from more important to less important tasks. It is a part of their task—the means to success.

SIR WILLIAM BEVERIDGE

In Lighter Vein

If Moses had been a committee, the Israelites would still be in Egypt.

J. B. HUGHES

It isn't so hard to live on a small salary if you dont spend too much money in trying to keep it a secret.—*Local Government Service* (England.)

The Right Honorable gentleman is indebted to his memory for his jests, and to his imagination for his facts.

RICHARD SHERIDAN

The members of the smart set never get that way by listening to one another.—*New York American.*

The Spiractor— What It Can and Cannot Do

Already the Spiractor with its revolutionary method of treating water and its unusually effective results, has attracted widespread attention among technical men. With its advantages fairly well known, its limitations are now for the first time formally presented and analyzed.

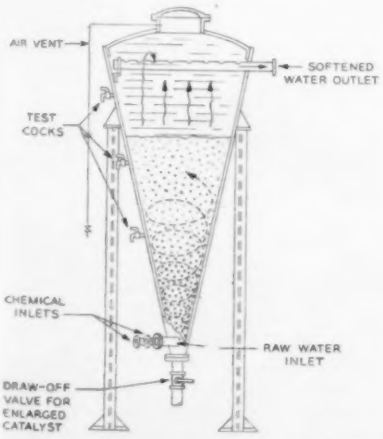
By HARRY L. BEOHNER
Sanitary Engineer
The Permutit Co.

MOST water-works men are thoroughly familiar with the generally accepted reactions that take place when water is softened by the lime-soda process. From a theoretical standpoint, it is easy to set up and balance the equations that turn the soluble calcium and magnesium salts in the water into the insoluble precipitates of calcium carbonate and magnesium hydroxide.

However, as any practical operator will tell you, the story doesn't end in the chemistry handbook. For example, these "insoluble" precipitates remain in a supersaturated solution up to concentrations of many grains per gallon—a factor that very often causes trouble in the distribution system. Another difficulty has been that of persuading the light, fluffy precipitate to settle; and most designers have had to build expensive settling basins, using detention periods of 4 to 24 hours to get good results, even though the bulk of the reaction takes place in the first hour. And finally there still remained the messy problem of getting rid of the sludge, an amorphous bulky mass that consists chiefly of water.

New Methods Developed

The engineer and other technicians have developed various methods of combating these problems, such as recirculating the effluent, and precipitation through an upflow sludge blanket, all well known to the industry. However, only recently have they been able to take advantage of this new method —namely, the passage of the fresh mixture of raw water and chemicals upward through a crystalline bed upon which the new precipitates can deposit.



A cross-sectional view of the Spiractor showing how the raw water rises through the catalyst bed.

This development, which is called the Spiractor, gives the greatest promise of overcoming the three main operating difficulties and at the same time simplifying design problems. Its existence, by this time, is fairly well known; and most alert officials, charged with the responsibility of water supply, have a clear idea of what it will do—that it cuts the treatment time to a matter of minutes rather than hours, and that it produces a chemically stable effluent and a precipitate that is dense, easily handled, and only about 5 to 10 per cent water. Therefore, it is important that the limitations of this revolutionary development be kept clearly in mind in order that its application will not be misdirected.

How It Works

Before discussing these limitations, let us briefly study the mechanics and performance of the Spiractor.

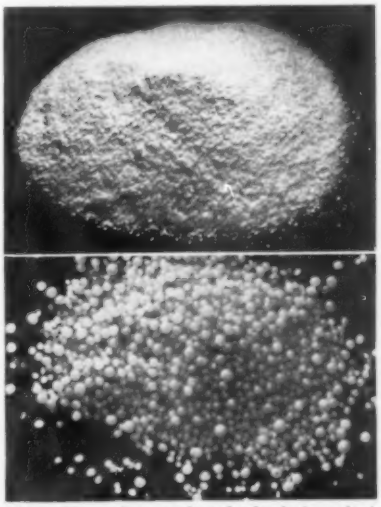
Invented in 1937 by E. T. Zenter, a Czechoslovakian scientist, it already has seen service in numerous European plants. The Permutit Company acquired a license under the U. S. Patent Office and, following thorough study and development covering its application here, has installed a number of large-scale units in the United States.

The construction of a Spiractor is simple. It is built in the shape of an inverted cone, with the water and the chemicals entering tangentially at the bottom of the apex. The water and chemicals rise through a suspended bed of calcium carbonate catalyst, and as the precipitate forms, it plates itself on these crystalline catalysts forming a hard, dense granular structure rather than a light floc.

The required size of the tank is equivalent to a detention time of only about 8 minutes. For example, a unit having a capacity of one million gallons per day measures 10½ feet in diameter at the top, 30 inches in diameter at the bottom, and 22 feet for a vertical height.

The velocity of the upward flowing water maintains the catalytic bed in suspension, and the top of the bed reaches a level where the water velocity no longer is able to maintain this suspension. At this point there is a sharp line of demarcation between the crystalline bed and the stable treated water.

As the catalyst particles increase in volume, it becomes necessary to remove from the bottom of the Spiractor, granular catalyst equal in weight to the precipitates formed. The natural hydraulic grading makes this job relatively simple. In order to maintain the proper average size of the particles in the catalyst bed, it is necessary to add a very small amount of new fine



TOP: *How the catalyst looks before it is put into the unit.*
BELOW: *A view of the enlarged catalyst that has been removed. Both these are full-sized reproductions.*

catalyst from time to time.

Where and How It Works

On an average, a particle grows about 4½ times in diameter. This represents an increase of 91 times the weight of the new catalyst added before it would be discarded. Expressed in a different way, this means that the theoretic amount of make-up catalyst required is only 1/90th of the total weight of the material precipitated. In actual practice it can be conservatively figured that the amount of make-up catalyst will not exceed 1/50th of the total weight.

Thus the theory of the Spiractor is the essence of simplicity—no mechanical agitator, no coagulants, no complicated distributing systems, a stable effluent produced in a period well under 10 minutes, and an easily-handled precipitate. Now let us look at its limitations.

The operation conditions which influence the efficiency of the Spiractor can be grouped as follows:

Best Suited

a. Hardness of the water to be treated predominately calcium i.e., less than 17 ppm magnesium hardness expressed as calcium carbonate.
b. Temperature of the water always 55° F or higher.
c. Turbidity of the water less than 5 ppm.

Intermediate

a. Hardness of the water to be treated largely calcium hardness and the magnesium hardness to be removed less than 85 ppm expressed as calcium carbonate.
b. Temperature of the water 50° to 55° F.
c. Turbidity of the water 5 to 10 ppm.

Least Suited

a. Magnesium hardness to be removed from the raw water greater than 85 ppm expressed as calcium carbonate.
b. Temperature of the water less than 50° F.
c. Turbidity of the water greater than 10 ppm.

Magnesium Difficult to Handle

The reason for the limitation involving magnesium, is that since magnesium hydroxide is less crystalline in character than calcium carbonate it does not adhere as completely to the catalyst granules. Therefore, with appreciable amounts of magnesium hardness, the turbidity of the effluent will be somewhat higher than normal. Under these conditions a greater load is placed on the filters.

Likewise, the temperature of the water has an effect on the speed of the reactions, and as the temperature goes below about 55° F there is an appreciable slowing up of the reactions which again increases the turbidity.

It should be clearly kept in mind also that turbidity in the raw water is not removed by the Spiractor.

Under proper operating conditions, the turbidity of the water leaving the Spiractor is in the range of 5 to 10 ppm; therefore, when crystal-clear water is required, the designer should provide mechanical filtration as an after-treatment. As an alternative, if facilities are available, prolonged storage of the treated water will permit the last traces of turbidity to settle out.

There are certain features of operation that should be kept in mind. Because of the very small size of the unit and the comparatively short detention time, it is advantageous to have a constant flow of water through the unit and a constant feed of chemical to the water being treated. There is little or no opportunity for averaging out chemical dosages in the Spiractor and, therefore, constant flow of both water and chemicals while the unit is in operation provides the most efficient treatment. This does not prevent a given unit from operating with full efficiency at any constant flow rate from about 20 per cent to 100 per cent of its design capacity.

This development makes it possible for many municipalities to take advantage of lime soda softening their water supplies. The advantages of lime treatment, which reduces the alkalinity and total solids, may be utilized without the usual disadvantages of space requirements and sludge disposal.

WPB Water Division on Regional Basis

HERE are the men you get in touch with when problems of maintaining supply and service during the war arise for essential military, civilian, and war production needs. As heads of the recently organized Water Supply Section in the WPB's Water Division they will review all major project applications from their respective districts as to relative essentiality.

Chief, William D. Williams, formerly consulting engineer, Stillwater, Minn.

Deputy Chief, Walter L. Leach, formerly Engineer of Design, Havens and Emerson, consulting engineers, successors to Gascoigne & Associates, Cleveland, Ohio.

Region I—New England and New York.

Regional Engineer, Bayard F. Snow, formerly consulting engineer, Boston, Mass.

Assistant Regional Engineer, J. Walter Ackerman, formerly Chief Engineer and Superintendent Consolidated Water Co., Utica, N. Y.

Region II—Pennsylvania, New Jersey, Maryland, Delaware, Virginia, North Carolina, and District of Columbia.

Regional Engineer, George C. Sullivan, formerly engineer with Blaw-Knox Co., Pittsburgh, Pa.

Assistant Regional Engineer, T. L. Hudson, formerly Senior Engineer, U. S. Engr. Dept., Baltimore, Md.

Region III—Tennessee, Mississippi, Alabama, Georgia, South Carolina, and Florida.

Regional Engineer, Carl W. Smedberg, formerly City Manager, Greensboro, N. C.

Assistant Regional Engineer, Howard S. Wakefield, formerly Assistant Engineer, Charles T. Main, Inc., Kingsport, Tenn.

Region IV—Wisconsin, Illinois, Indiana, Michigan, Ohio, Kentucky and West Virginia.

Regional Engineer, Frederick H. Weed, formerly consulting water works engineering practice with Allen Hazen, Geo. W. Fuller, and James H. Fuertes.

Assistant Regional Engineer, Robert L. McGrath, formerly engineer, U. S. Dept. of Agriculture, Soil Conservation Service, Washington, D. C.; and prior to that engineer, Burns & McDonnell, consulting engineers, Kansas City, Mo.

Region V—North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Oklahoma, Arkansas, Texas and Louisiana.

Regional Engineer, Ray B. Plummer, formerly Assistant Chief Engineer, Stuart-Warner Corp., Green River Ordnance Plant, Dixon, Ill.

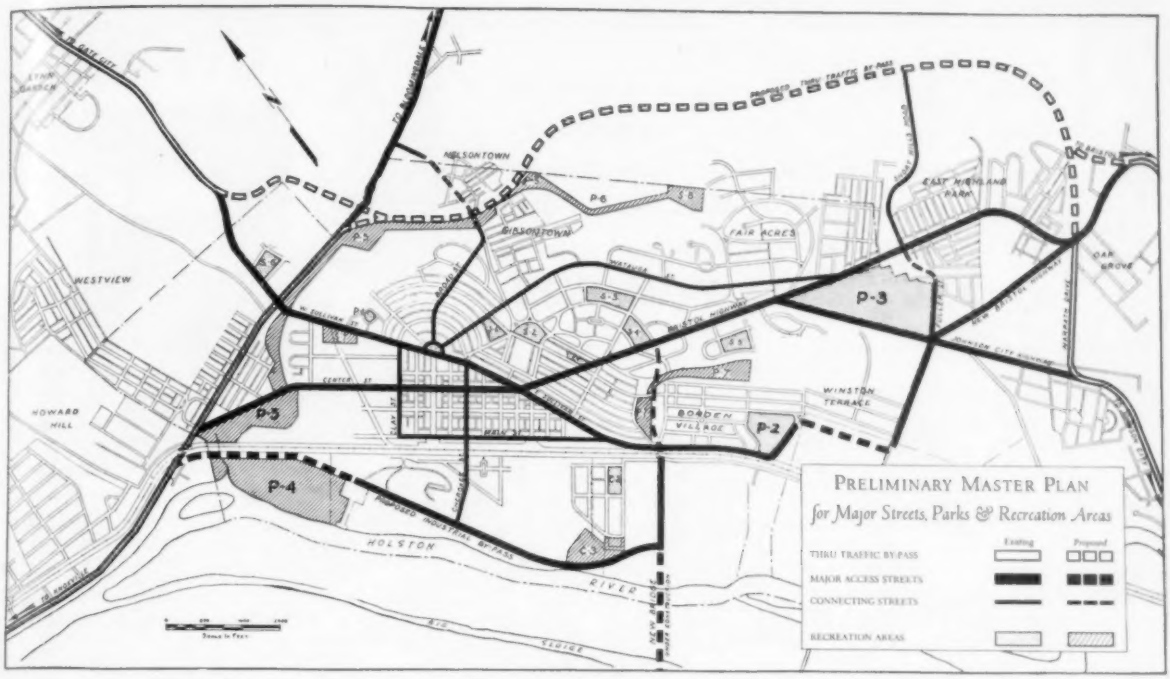
Assistant Regional Engineer, William J. Keays, formerly Senior Conservationist, U. S. Indian Service, C. G. C. Division, Phoenix, Ariz.

Region VI—Washington, Montana, Oregon, Idaho, Wyoming, California, Nevada, Utah, Colorado, Arizona, and New Mexico.

Regional Engineer, Gerald E. Arnold, Sanitary Engineer (R), U.S.P.H.S. under special assignment. Formerly Sanitary Engineer, San Francisco Water Department.

With the exception of Mr. Arnold in Region VI, these engineers will have headquarters in Temporary R Bldg., Washington, D. C. Mr. Arnold will have his headquarters at the WPB District Office at 1355 Market St., San Francisco, Calif. Applications for water-supply projects from water utilities should be sent to Washington or to the WPB field offices as in the past, depending on the type of application.

Small City Presents Master Plan



Initials in recreation areas indicate: P, parks; S, school playgrounds; C, colored park areas.

As many readers of THE AMERICAN CITY are aware, Kingsport, Tenn., has the distinction of being one of the relatively few American communities whose development has been the result of planning rather than of so-called "normal growth." Founded in 1917, it has gone through an orderly and controlled transition from scenic farmland to an industrial community of 30,000 people. Care was taken from the beginning to reserve areas for specific uses—industrial, commercial, and residential—for both immediate and future development. Attention was also given to the location of schools churches, and recreation areas; the street system was logical and the rights-of-way were generally of ample width.

But when the late John Nolen laid out the plan of Kingsport 25 years ago, he could not foresee all of the developments of the coming years; he realized that opportunity should be provided for necessary modification to meet future conditions. It was logical, therefore, for the Board of Mayor and Aldermen to create, in 1941, the Kingsport Municipal Planning Commission. Consisting of the mayor, one alderman and three citizens, the Commission has been active continuously since its organization. It has had the technical assistance of the Tennessee State Planning Commission. Its main purpose is to plan the growth of Kingsport on the basis of the Nolen plan and in the light of developing conditions. Its activities to date have consisted primarily in the preparation of the plans for park and recreation areas and for major streets indicated on the accompanying map. An interesting proposal for an area beyond the limits of the map is for the development of Bays Mountain Park. Here on a site of exceptional beauty, an area of 1,500 acres within a few miles of the city will be developed.

The Planning Commission states that it intends to continue the development of the master plan with studies related to land use and zoning, schools sites, water and sewer lines, and the further development of the business section and certain residential areas. Such a program will continue over a period of years, and the plans will naturally be subject to constant revision of ever changing conditions. In their preliminary form these plans will be presented to the public, and all interested citizens will be asked to offer constructive criticism.

It is hoped that in the near future a Regional Planning Commission will be established which will prepare coordinated plans for the whole Kingsport community, of material benefit to the citizens both of the city and of the region.

Three-Way Cooperation Urged

Why shouldn't the states agree on some policy of federal assistance for planning and public works and then ask the Congress to make a commitment within the limits of that agreement? We accomplish nothing by complaining that Congress refuses to act. We must never forget that the states have an even greater responsibility to act in relation to their cities. Passing the buck or evasion of responsibility on the part of either cities or states won't take the place of realistic three-way cooperation among the principal units of government.

—From the *News Bulletin* of the American Society of Planning Officials for November, 1943.

Now it can be told!

On Battle Ships—in Far Distant Islands—in the African Campaign—in Alaska—GRUENDLER Equipment in the War as in peace time, is doing an important job, a big job. New developments in Equipment Efficiency have been made and will be announced Post War.

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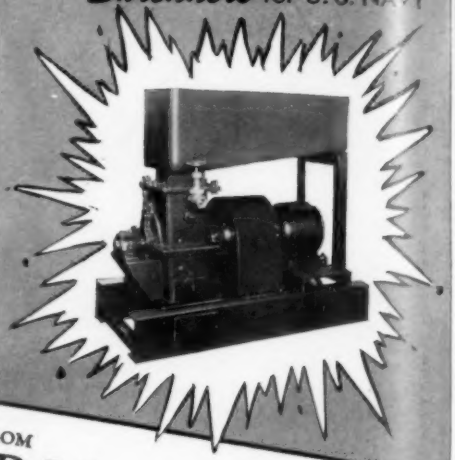

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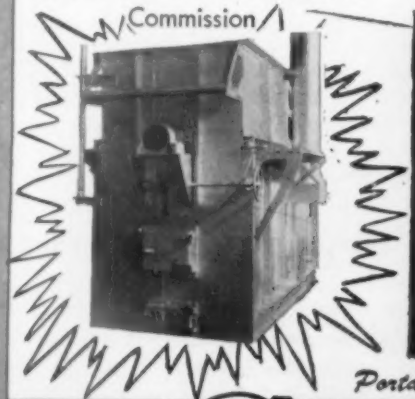
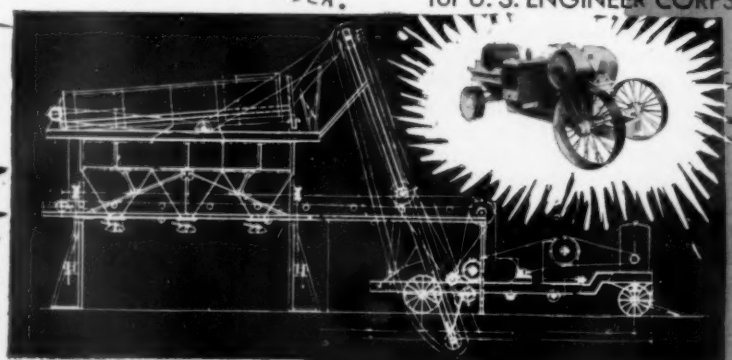


Portable Crushers for U. S. ENGINEER CORPS



Portable Crushing Plants for "Sea-Bees"—U. S. Bureau of Ships and Docks

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Air Traffic and Airports in Relation to Urban Planning—II

By William A. M. Burden
Special Aviation Assistant
to the Secretary of Commerce

Civilian Flying Facilities

The airplane manufacturing industry cannot grow to really large proportions on the transport and contract air carrier market alone, any more than the automobile manufacturing industry can rely on the market of trucks and buses, which incidentally account in ordinary times for but one-fifth of total automobile sales. The primary burden of developing the use of what the industry has termed "personal plane" rests upon the aircraft manufacturer. Unless an aircraft is developed which will be both easy to fly and cheap to manufacture, private aviation cannot come into existence on a large scale. However, the utility of the private airplane, and thus its acceptance by the public, will also depend to a large degree on the developing of a conveniently located system of airports for the use of private fliers. Unless and until the roadable aircraft becomes really practical, all large metropolitan areas must have an adequate number of private flying airports distributed through the area, so that as large a proportion of the residential district as possible is no more than fifteen minutes to a half hour from a satisfactory private field. These private airports should be attractively landscaped, and training activities should, as far as possible, be excluded from them in order to reduce excessive noise and the hazards inseparable from training operations.

In the case of small towns, both scheduled and private flying can continue to operate from the same airport for a long time to come. The problem of providing the network of private fields that will be necessary in national parks, recreational areas, and other parts of the country will not, of course, fall on the urban planner.

Private flying facilities will be generally Class 1 or 2 and for the most part unpaved, except for service and parking aprons. The area required for these fields is not great, 40 to 50 acres, and they should have attractive and suitably landscaped grounds.

This is the second and concluding section of Mr. Burden's article, the first instalment of which appeared on pages 33-37 of the November issue.

Subjects discussed last month included: Tomorrow's Air Traffic, Planning an Urban System of Airports, Spacing of Airports, One Major Airport vs. Multiple Airports, Access Highways and Transport, The Outlying Site for the Airport, and Separate Airports for Different Kinds of Operation.

The author emphasizes the need for comprehensive and farsighted planning, stressing proper integration of air and surface transport routes, and teamwork among federal, state, and local agencies, as the common denominators for success in the planning of airports.

The Helicopter and Air Transportation

As in the case of the airplane, the first commercial use of helicopters will be in short-haul, mail, and passenger services which will be flown by professional pilots. Such operations will provide invaluable information as to the helicopter's operating characteristics and prepare the way for its general use by private fliers. Obvious services of this nature which suggest themselves are:

1. Transportation of mail between post offices and to terminals, and similar special short-haul operations where speed and substantial load-carrying ability is not required.
2. Bus shuttle service between airports and between airports and town. (Sikorsky believes the 20 passenger helicopters will be entirely practical.)
3. Taxi service.

A typical application before the Civil Aeronautics Board for short-haul helicopter service has been made by a company with considerable experience with rotating wing aircraft. It envisions a mail collection and distribution service in the Los Angeles Metropolitan area which, though it covers only 165 route miles, will serve some 46 post offices, many of which are only two or three miles apart. Roof landings are proposed at four points, and small parking lots within one-quarter mile of the post office are available in 36 additional cases.

The landing and take-off requirements of an individual helicopter are much more modest than those of even the best light airplanes; the two-place Sikorsky can land in a space of 40 x 40 feet. However, if any large number of helicopters are to land in rapid succession at any one point, a substantial area must be provided. Helicopters, even with folding rotors, will also require considerable room to park; so the helicopter landing grounds of the future will have to be larger than some enthusiasts have envisioned, and substantial numbers of them will be required if the private use of helicopters becomes widespread.

Roof-Top Landing Areas

Roof-top landing areas, the dream of so many urban planners, may be made really practical for the first time by the helicopter. Municipalities constructing large new buildings, which will be in use for the next generation or two, should keep this possibility in mind. Such roof-top landing places will first be used by professional pilots operating scheduled or taxi service in much the same way that an experimental autogiro service was operated to the roof of the Philadelphia Post Office in 1939-1940.

It is too early to give exact design requirements for such roofs, but in general the section used for actual landings must be strong enough to withstand a static concentrated wheel load of approximately 1,000-10,000 pounds per square foot, depending on the size of the machine, and a concentrated impact load of approximately five times these

How to give water a BATH!

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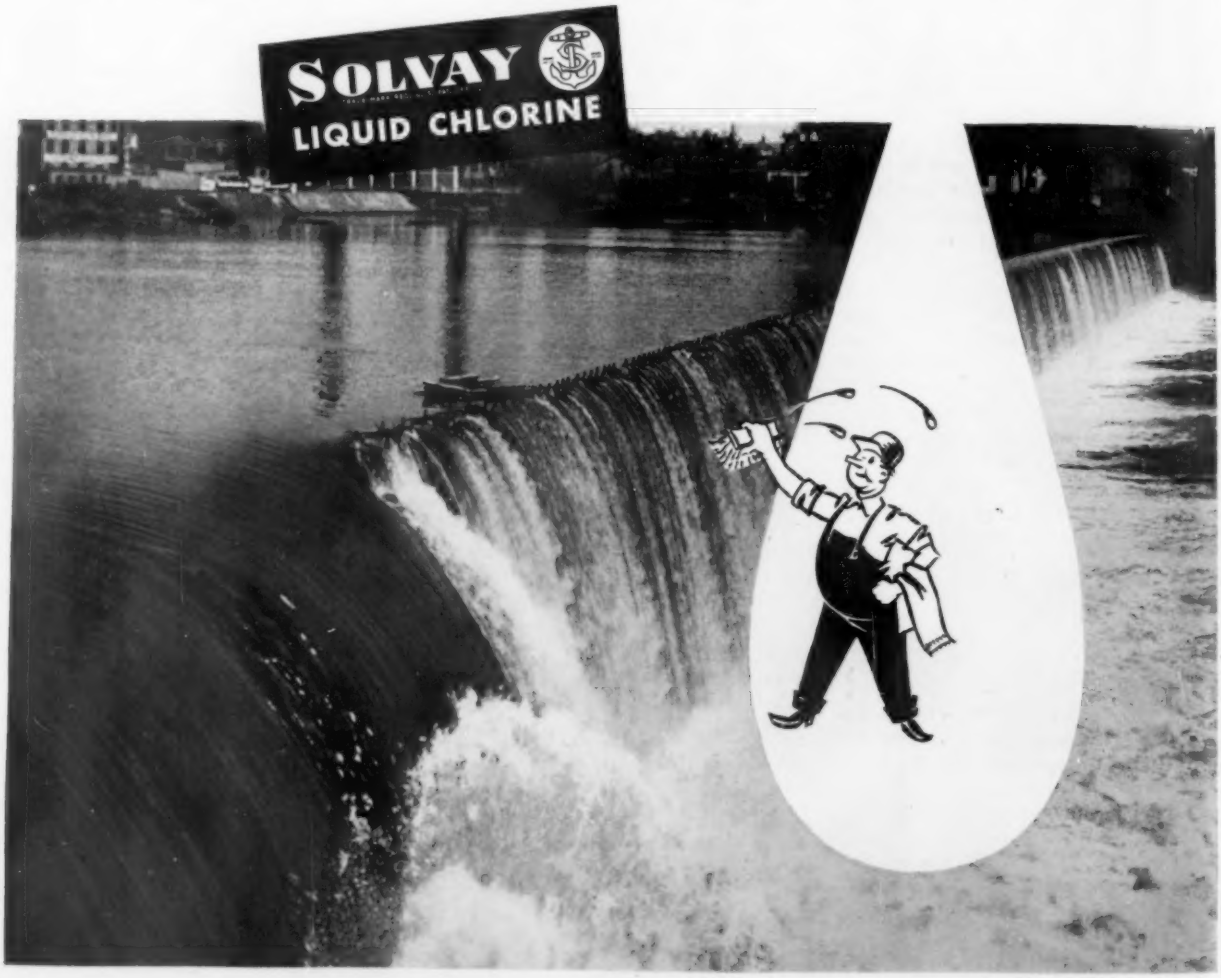


amounts to take care of the momentary landing shock. A load of 10-25 pounds per square foot, should be the maximum in the parking area. The size of the platform will depend upon the number of landings which it is desired to make simultaneously or in very rapid succession, for in the case of scheduled services, the storage problem will not arise. If the private use of helicopters becomes widespread, ample storage space must be provided either on the roof or on lower floors accessible by elevators or ramps.

It is important that the buildings on which roof-top landing spaces are provided be so located that a landing can be made in a safe area in the event of engine failure on a take-off. This means that supplementary roofs for emergency landings should be available or that small open lots or parks should exist near the main roof-top landing field. Aerodynamic considerations are also important in the design of the roof. To insure reasonably steady air currents over it, it should be higher than adjoining buildings. The roof itself should, of course, be unobstructed. The edges should be curved in such a fashion as to insure smooth laminar air flow over the surface or, better, should be raised a considerable distance above the main roof with an open space between through which the wind may pass without being deflected.

Helicopter Traffic Lanes

If helicopter traffic is ever to reach substantial proportions, the division of traffic lanes along which it can be channeled must receive consideration. Sikorsky has suggested that helicopter traffic should enter metropolitan areas at very low altitudes along definite lanes. In the case of New York, for example, the East River might be considered a possible channel for helicopter traffic. The ceiling for helicopter traffic in private operation, in any given community, as for the small easy-to-fly airplane, is likely to be traffic-control requirements. For the helicopter, like all aircraft, is affected by the wind, and it too will need ample air space for its safe operation by the non-professional pilot.

To aviation's over-optimists and dreamers I would like to say that the time when aircraft with a fixed or rotating wing can safely fly wing-to-wing, blackening the sky appears to be in the unforeseeable future. Only highly trained military fliers can even approximate this condition. If you want to compare air traffic with the traffic of other forms of transportation, do not use automobiles, but use boats, which the airplane more nearly resembles. But even so aircraft need very much more elbow room in which to maneuver than do boats.

Airports and Land Use

In briefly considering airports and land use, it is necessary to consider their relationship to land value—for aviation will increasingly affect both the use and value of land, not only in the neighborhood of airports, but in urban areas and in districts distant from the city as well.

Land values have formed three major patterns in the last hundred years, each based on a predominant type of transportation. First, it was water transportation, which gave peak values to land along the water fronts; second, it was the railroads, which established new land values along railroad rights-of-way and around railroad and freight terminals; and third, it was the automobile, which in the last decades established new business and residential centers on automobile highways. Today, it is the airplane which is beginning to change the land values in communities, along the airways, and in the neighborhood of airports.

The upward or downward trend in both volume of sales and in value of land adjacent to airports, varies according to the infinitely varying conditions in different parts of the country and of individual communities. The variation in trends among other factors depends on: (1) the type and use of the airport under consideration, (2) the character of the adjacent land—whether it is run down or on the upgrade, and whether it is undeveloped, residential, industrial, etc., (3) whether owners of adjacent property are air-minded or the reverse.

As a general rule, the value of undeveloped land and the value of run-down neighborhoods adjacent the airport, will increase; while the value of intensively developed neighborhoods will decrease. The change in value is naturally more marked the closer it lies to the airport. Some property owners are interested in aviation and consider it an advantage to be near an airport; others do not. It is to some degree a question of personal preference. Some individuals like to be near centers of activity.

New Communities Near Airports

As airport grounds are more attractively laid out, and as air transportation becomes increasingly important to the life of the community, it seems likely that there will be an increasing demand to live near airports, particularly those airports serving civilian flying. And it is likely that industry will be attracted to some of the miscellaneous-service airports where one-story manufacturing structures could be built in attractively landscaped surroundings. Such factories would create the need for residential districts for employees, shopping centers, and indoor and outdoor recreational facilities adjacent to or close to the airport.

The airport will undoubtedly attract population and industry just as water, rail, and road transportation have done in the past. *Whether or not these new communities will be attractive places in which to live and to work, is likely to depend on how well they are planned, rather than on any disadvantages we associate with the operation of the airplane.*

Objection to airplanes in areas adjoining airports is largely based on the annoyance caused by the noise of aircraft operations. This noise is in part caused by aircraft motor exhausts, but it is due primarily to the revolving at high speed of airplane propellers.

Aircraft motor noise, at least on private airplanes, will probably be largely eliminated by laws requiring the use of mufflers on aircraft motor exhausts—as required for automobiles; while propeller noise may be reduced—especially with regard to private planes—by intensive research. In any case, it is likely that the problem of airplane noise will be solved, at least as far as private flying is concerned, one way or another, if the demand for its solution becomes great enough—as it probably would with a substantial increase in the number of aircraft operating close to communities.

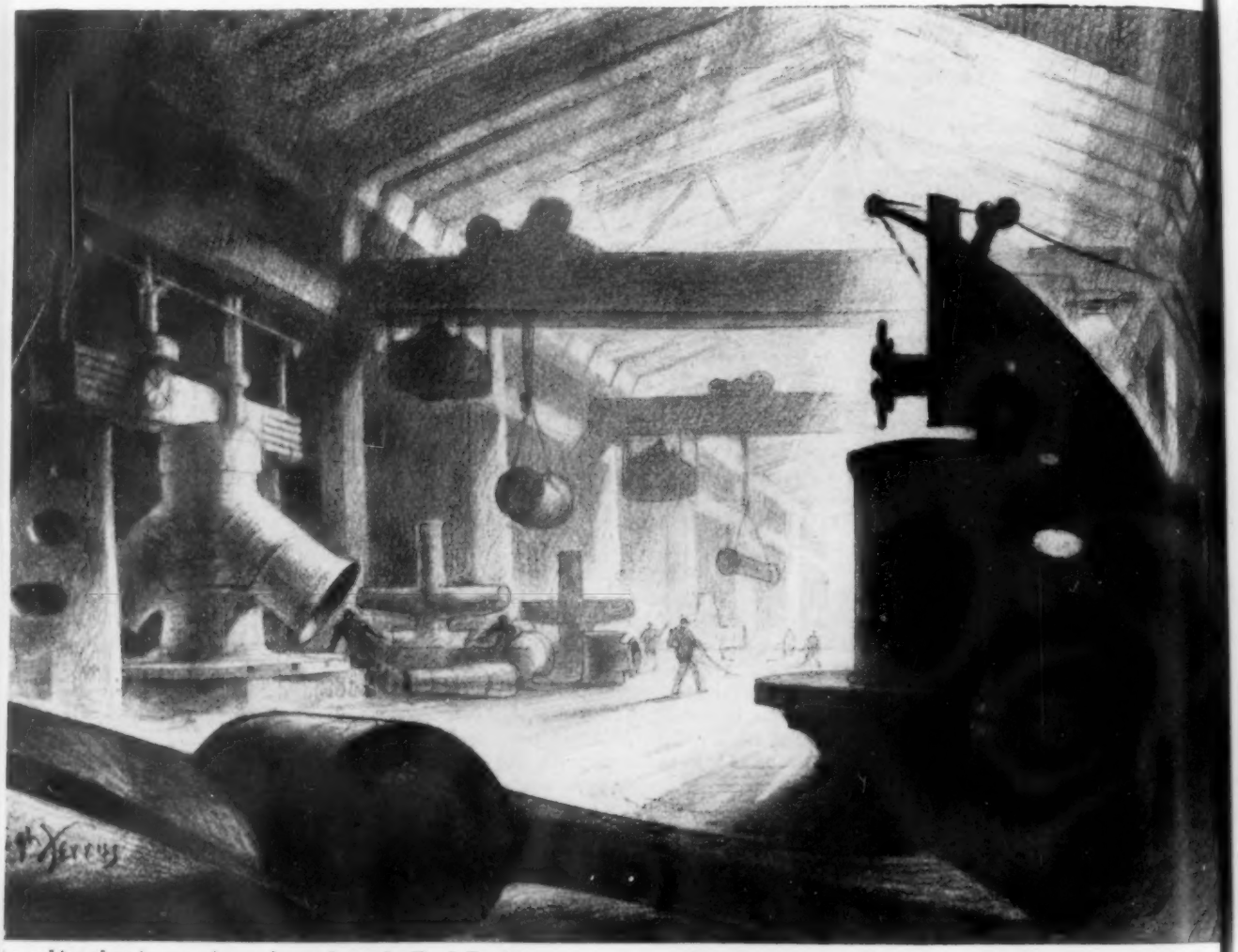
Recreational Areas

The airport is a natural attraction and center of interest. Airports will not only attract air traffic in increasing volume, but they will act as a magnet for growing numbers of sightseers as comprehensive planning and well designed buildings in a suitably landscaped setting make the airport an important local attraction. Airport marginal areas and airport-station grounds will be developed for recreational purposes. If the urban planner does his job well, airports will become increasingly desirable places near which to live, and new communities will undoubtedly grow up around some of our air centers. The type of recreation offered will depend, among other factors, on climate; type of airport—whether for scheduled operation, industrial use, or private flying; and the

Wartime progress

Many thousands of tons of U. S. Cast Iron Pipe have been required for camps, air and naval bases, war plants and shipyards and their housing needs. With such war construction nearing completion, our pipe and fittings plants are again ready to produce promptly any requirements which cannot be immediately supplied from our amply-stocked storage yards.

Meanwhile, our special foundries and machine shops are contributing further to the war effort in the production of marine and other castings, as well as munitions and parts for war materiel. Some of this special production has required developments in methods and equipment undreamed-of in cast iron pressure pipe foundries a decade ago.



machine shop in one of our plants, drawn by Hugh Ferriss.

UNITED STATES PIPE & FOUNDRY CO.

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individual needs and preferences of any given community.

Types of recreational areas suitable for airports may include parks, playgrounds, football and baseball fields, tennis courts, swimming pools, and fields for flying powered-model airplanes. Recreational areas, where relative quiet is desirable, will be spaced in those sectors of the marginal areas between the runway approaches, where trees and structures could be built which would fall within a glide-path angle of 7 to 1 as measured from the edge of the landing area. And, incidentally, parks and forest land on the marginal areas of some of our civil airports would be useful in affording concealment to the military planes operating off these airports in times of national emergency.

Recreational areas can also be developed and laid out in such a way as to bring in the auxiliary revenue to help balance airport budgets until volume of plane traffic is alone sufficient to do so. LaGuardia Field, for example, in its first year of operation, took in $122,000 worth of dimes from turnstiles installed on the observation terrace which covers its 1400-foot plane-loading platforms. Comprehensive and rational planning and efficient management can make the airport, I believe, into a self-supporting showplace of the community.

The creating of a suitable setting for the modern airport affords urban planners almost limitless possibilities.

Effect of Airports on Urban Planning

Airport development will vitally affect urban planning, as surface transportation, business, industry, and population are re-oriented over a period of years, to the needs created by air travel. *Within practical commuting distance by air, 100 to 200 miles from our great metropolitan centers, new towns will spring up during the next generation or two.*

Commuting will eventually be possible, a plane flight instead of a short rail or highway trip away from population centers, and urban areas will tend to reach out into the countryside to merge into the larger regional unit.

Airports will gradually attract business, industry, and populations, just as seaports and railway centers have done in the past, creating new satellite towns, new cities, and new highway and railway networks. In short, the decentralization already started by the automobile will be intensified and extended by the airplane.

Public Libraries as War Memorials

By Julia Wright Merrill
American Library Association

IN thousands of American cities and towns today, that most democratic institution — the public library — is cramped and confined in a building long outmoded. In many other small towns and villages and in rural areas, public library service is still lacking.

An adequate, modern public library building would serve as a living War Memorial to those who died in the cause of democracy. It would invite the passer-by with its show windows. It would be situated on a busy street, not out in a park, or civic center, or schoolhouse. The entrance would be near the street level instead of up a high flight of steps. Inside, books, would be displayed invitingly and spacious reading rooms, with modern lighting, would attract all ages. Meeting rooms of various sizes would be provided for forums, small informal discussion groups, showings of educational films, and meetings of educational organizations. The library would be a community intelligence center.

A new main library is the great need in many cities, where the present building dates back to the 70's or 80's or 90's. Additions and remodelling would be feasible for some later buildings. Branch libraries are needed in other cities, to serve new and rapidly growing sections. A mobile branch—a large bookmobile or bus—is another possible type of memorial.

Before a project is worked out in detail, the state library or state library commission at the state capital might well be consulted, especially about the area that should be served. The new "Post-War Standards for Public Libraries," prepared by the American Library Association for the National Resources Planning Board, emphasizes the importance of large areas of public library service and support in these days of rapid transportation—a large county, or a region of several counties, or a trade area. Branch libraries and smaller stations serve the various communities within such large units.

For the actual planning of a building, librarian and architect must work together. Neither can do the job alone.

A library is far more than a building or even a collection of books. It takes an able staff to build up the collection of printed and visual materials and make it of the utmost service to each reader. But the ablest librarian is handicapped by an out-of-date building and greatly aided by a modern, generous, convenient but not extravagant building.

For effective post-war library service, retool the library plant.

Architects Urge "Horse Sense Planning"

HORSE sense planning that is far from being horse-and-buggy planning is advocated by Albert Mayer and Julian Whittlesey, New York architects, in an elaborately illustrated 16-page article in the November issue of *The Architectural Forum*. Challenging private enterprise to function effectively in post-war urban redevelopment, the authors say:

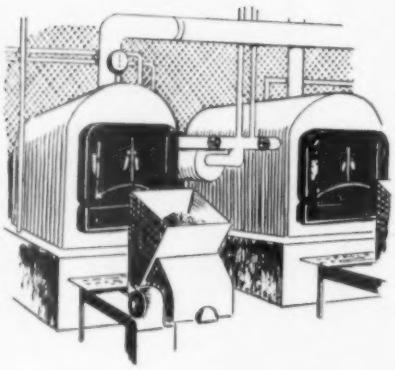
"Everybody agrees that something must be done to make U. S. cities pleasanter and easier places to live in, but almost everyone conceives this vital task as the job solely of public agencies, which can be done only on an enormous scale and paid for only by a large dip into the federal pocketbook. As to just what form this large scale action shall take at some misty post-war date there is much less agreement. . . .

"Private enterprise cannot, unaided, accomplish the wholesale rebuilding of cities, but the enlightened self interest of only a few property owners can revitalize entire neighborhoods. . . .

"The major thesis of horse sense planning is that only in the very short run does anything prove profitable to the individual investor or financial institution which is harmful to the neighborhood or city. While our cities were still expanding, this was sometimes not the case. The more the builder crowded his land, the better off he was. Any suggestion that he consider the civic implications of this practice looked like arrant nonsense, if not a demand for outright philanthropy. But now that our cities have reached their maturity, now that in-city areas must compete for public favor with outlying developments, now that the fiscal consequences of unsound urban economics are becoming painfully evident, it is getting clearer every day that if we try to continue business as usual—which means real estate speculation as usual—it will not be long before business will shrink to the point where it will not be worth continuing."

Power Insurance

Photograph above shows a Battery of Graver Zeolite Water Softeners.



UNINTERRUPTED POWER is important in any municipal plant. Yet the efficiency of your steam generating unit can be seriously impaired by the use of improperly conditioned boiler feed water.

Hardness in water is caused by the presence of calcium and magnesium salts. These elements cause scale formation on boiler tubes and drums, greatly reducing the heat transfer efficiency of the boiler. And, if this scale is present in any appreciable degree, localized over-heating results, which may cause disastrous boiler failure.

Graver Zeolite Water Softeners prevent this trouble by removing the calcium and magnesium salts from the water supply. They improve boiler efficiency, eliminate frequent shutdowns for tube cleaning, and materially reduce the cost of maintenance and repair.

Whether yours is an immediate need or merely a plan for the future, consult Graver. Our engineers will submit unbiased recommendations and estimates without obligation.

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WATER CONDITIONING EQUIPMENT

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Graver designs, builds and installs all types of water conditioning equipment including:

Zeolite Water Softeners • Hot Process Water Softeners • Water Filters • Iron Removal Filters • Taste and Odor Removal Filters Oil Removal Filters • Sewage Treatment Equipment

Dallas Stabilizes with Soil-Cement

By J. T. Conroy
Acting Director of Public Works
Dallas, Texas

SPRING AVENUE constitutes Dallas' first trial of soil-cement for street construction. The street serves the Frazier Courts Housing Project, a 250-family development for the colored population of this vicinity. Located close to the southeast city limit, it is near a school for colored children and an attractive park with a lake and community buildings. The streets within the limits of the housing project, and the curb and gutter and sidewalks surrounding the project, were constructed by the Federal Housing Authority.

The city of Dallas originally planned to construct a white-rock base with an asphaltic concrete surface. However, investigation of soil conditions indicated that the existing soil was excellently suited for a soil-cement base. In view of the saving that could be effected by treating the soil in place with cement, and because of the critical supply of explosives and truck tires, a 6-inch compacted soil-cement base was constructed. A single penetration asphalt surface treatment was placed as a wearing course.

This project extended along Spring Avenue from Lyons Street to Troy Street, a distance of approximately 913 feet. The base was constructed with a 25-foot width between an earth parkway on one side, and a concrete curb and gutter on the other. The soil was a brown, coarse sand of Public Roads Administration Soil Classification A-3. Gradation tests indicated 96 per cent of the material between sieve sizes nos. 10 and 60, and 4 per cent between nos. 60 and 270.

Preliminary tests of the existing material indicated that 9 per cent cement by volume (.405 bag per sq. yd.) was required for the proper strength. Optimum moisture of the soil-cement mixture was 10 per cent, and the maximum density was 120 lb. per cubic foot.

The sand on the street was sprinkled thoroughly on July 6 in order to speed the operation the next day, and to insure uniform moisture conditions. The soil cement base was then started and completed on July 7 by the city of Dallas forces. The following equipment was used:

3—1½-ton trucks for cement
1—30 hp John Deere tractor
1—50 hp Allis Chalmers tractor
1—6-ft. Seaman Pulvi-Mixer
1—3 bottom gang plow (14 in.)
1—10-ft. spike tooth harrow
1—Allis Chalmer Dual-Wheel maintenance grader
1—600-gallon pressure distributor (10-ft. bar)
1—Double-drum sheepsfoot roller
1—Pneumatic tired roller

The pressure distributor, used for placing the water, is city-owned and normally is employed on asphalt work. The equipment was used in preference to a gravity tank to insure even distribution across the street.

Two weeks after the completion of the soil-cement base, a single asphalt penetration surface treatment was added as a wearing course. Asphaltic cement with 230 penetration was used placed at a temperature of 325° at a rate of ½ gallon per square yard.

The total cost of the 6-inch compacted soil-cement base was 38 cents per square yard. The cost of the asphaltic wearing course was 7 cents per square yard.

The street gets an application of asphalt for wearing surface.

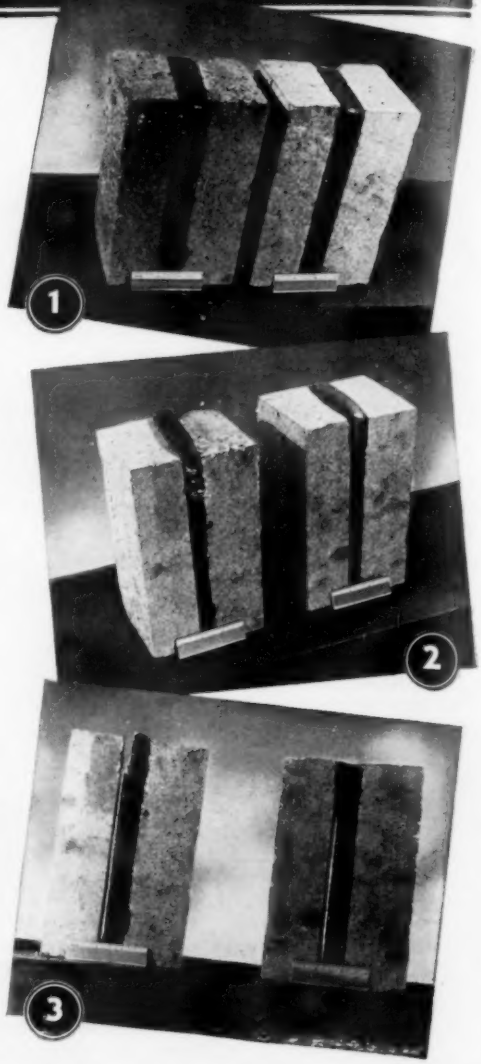
A view of the completed street with the single asphalt surface treatment covering the 6-inch soil-cement base.

How the street looked after the 6-inch compacted soil-cement base was completed.

VICTORY Para-Plastic

AN ELASTIC BOND SUSTAINING WATERPROOF ADHESIVE SEAL
HOT POURED, RUBBER-LIKE, EXTENSIBLE AT LOW TEMPERATURES

Many engineers are finding that Victory Para-Plastic Sealing Compound solves construction and maintenance problems connected with expansion joints in concrete pavement. To visualize the tremendous superiority of Para-Plastic over ordinary asphalt seals, please study the three photographs shown here.



1 Both test blocks have been prepared using Servicised 1" Fiber Expansion Joint Filler; however, the joint at the left has been finished with a top seal of the ordinary asphalt type, while the joint at the right has been sealed with Para-Plastic.

2 Both test blocks have been compressed to ½" thickness as would be the case in a concrete pavement when slabs expand due to heat. As expected, the non-extruding fiber joint has compressed within its own volume and thereby has permitted the joint seals to remain in place.

3 The blocks have returned to the original position as would be the case when concrete slabs contract due to cold. In both joints the fiber joint has re-expanded to 70% of its original thickness but this still leaves an opening between the fiber filler and the blocks on one side. In the case of the asphalt seal at the left the joint is wide open at the top permitting water to run through the joint from top to bottom. In the case of the Para-Plastic seal at the right, the bond with the concrete remains unbroken (it can be stretched another ½" without breaking) and no water can pass through the joint since the top is permanently sealed.

SERVICISED QUALITY PRODUCTS © 1930

Servicised Victory Para-Plastic Sealing Compound complies with Fed. Spec. SS-F-336 and C. A. A. Spec. P-605. For additional information and prices write today.

SERVICISED PRODUCTS CORP.
6051 West 65th Street, Chicago 38, Ill.

Villages Like Good Water, Too

and here is one in Central Illinois that is getting it

By BENNETT B. SMITH

YATES CITY, Ill., with a population of a scant 650, has built itself a water works that many big cities should admire. By careful community planning and good engineering, they have acquired a system that furnishes water that is not only pure and adequate for fire protection, but desirably soft as well. This is the way it happened.

Back in 1936 this little Illinois village, located some 25 miles outside of Peoria, named A. L. Rector for its mayor. He and his board of trustees decided to investigate the possibility of a water works and engaged the Miller Engineering Service, Streator, Ill., to make a survey and report. After receiving a favorable opinion, they instructed him to proceed with the drawing of plans. Arranging to finance the improvement on a revenue bond basis, they set the work up as a WPA project —$52,000 being furnished by the village, and $40,000 in labor and materials by WPA.

The work began in November 1937, and the first water went through the mains in the spring of 1938; however, extensions and further construction continued until January of this year.

Supply from Underground River

The supply itself is derived from two shallow wells driven into a geologically interesting underground river. This formation, resulting from prehistoric glacial action, gives the community an abundant supply naturally filtered through glacial drift. At present two are all that is required, one an 8-inch and the other, a 6-inch. Exhaustive tests by the State Department of Health, pumping the wells at 125 gpm for several hours, showed very little draw-down. Two Fairbanks, Morse pumps are used on the wells, one with a capacity of 80 gpm, while a second booster unit used for fires and other emergencies can pump 400 gpm.

The distinguishing feature of the system itself is that it uses a pressure tank in place of overhead storage. Water drawn from the wells goes first to a 125,000 gallon gravity storage reservoir, and then passes through an Infilco zeolite water softener to enter a 2,500-gallon pressure tank. Operating on this tank is an 80-gpm Fairbanks, Morse pump that cuts in when the pressure drops below 40 pounds per square inch.

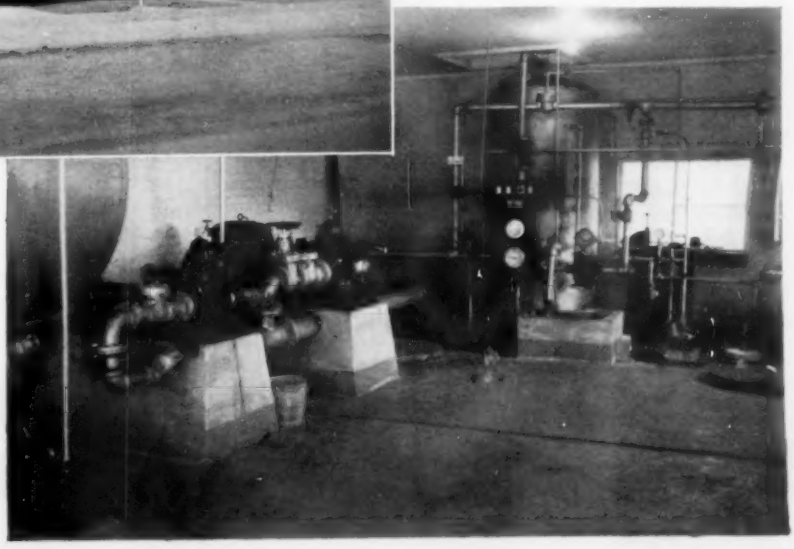
The distribution system consists of Transite asbestos-cement pipe. Careful design makes it possible to eliminate all dead-ends and supply complete circulation of the water.

Fire Protection

Fire protection is enhanced by the placing of 50 Mueller hydrants at strategic locations throughout the village. Insurance rate reductions — varying from 50 per cent for the business district to 35 per cent for residences are anticipated. The system has successfully passed fire tests calling for five fire hoses operating for seven hours continuously.

The Water Department is under the supervision of Mr. J. Van Dusen and is managed directly by the Village Council. A. L. Rector still heads the village as Mayor, however his council has changed since the work was begun. Glen Bowman is the present Clerk, and D. C. Root is Treasurer.

ABOVE—*Yates City's attractive little water works serves double duty by housing the village fire truck.*



RIGHT—*An interior view of the water works, showing the pumps and the water softening equipment.*

Mister, you're mighty lucky to have those TWINS*

*"Caterpillar" *TWIN* Services

AND we are justifiably proud to be their Papa! They'll serve you well with a minimum of care and cost. We saw to that in the beginning.

TWIN Number One is called "Factory Built-in Service." His very important brother is "Dealer Quality Service." Together, they bring vigorous, dependable, year-round PERFORMANCE from your "Caterpillar" Diesel equipment.

For example, Number One represents "Caterpillar's" basic engineering skill and precision workmanship which have given you

(a) *Simplicity of operation.*
(b) *The ability to work in any climate, on any job.*
(c) *The ability to burn a wide variety of fuels.*
(d) *Proved—again and again—dependability.*

Number Two—"Dealer Quality Service"—offers you

(a) *Factory-trained service men.*
(b) *Modern shops.*
(c) *Special tools.*
(d) *Money and metal saving repair methods.*

This particular "TWIN" is vitally essential to you right now. Make it a point to see him regularly!

There is scarcely a "Caterpillar" Diesel Tractor, Motor Grader, Engine or Electric Set—regardless of age or usage—that hasn't a lot of dependable working hours left in it. "Dealer Quality Service" will help you keep it on the job.

REMEMBER

THE FIGHTING FOUR

INSPECT. Look your equipment over frequently. For expert "internal" inspection, call in a trained "Caterpillar" Service Man. Read your Operator's Instruction Book.

LUBRICATE. Use the right oil at the right time in the right place and in the right quantity. Keep it clean and replace before it deteriorates.

ADJUST. Tighten all bolts. Keep valves and clutch in proper adjustment. Read the Operator's Instruction Book.

REPLACE. Have "Dealer Quality Service" recondition or replace worn bearings, cylinder liners, clutch linings and other parts vital to restored power and extended engine life.

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TO WIN THE WAR: WORK—FIGHT—BUY U. S. WAR BONDS!

Wartime Water Rates--IV

Increasingly frequent are the indications that water rates cannot be expected to drop a great deal further. Of the five cities studied this month, three show rate increases over those used in previous years. Significantly healthy is the fine post-war construction fund established in Denver.

Denver, Colo.

Rates:

(Denver has both flat and metered rates)

FLAT RATES

Residence—One Family

	Quarterly rate
Residence—1 to 4-room house. All finished rooms to be counted. Laundry counted one room.	$0.90
For each 2 rooms additional, if more than 4 rooms in house	0.18
Bath	0.90
Water closet	0.90
For each additional bath or water closet	0.54
Auto—for each one kept on premises.	0.45

RESIDENCE—MORE THAN ONE FAMILY

Residence—up to 9 rooms	1.80
Each room, 10 rooms and over	.27
Rooms—over business blocks, each room	.27
Baths—house 15 rooms or less, or for private use, each	.90
Baths—house over 15 rooms, or for general use, each	1.80
Water closets—house 15 rooms or less, or for private use, each	.90
Water closets—house over 15 rooms, or for general use, each	1.80

Plus other miscellaneous charges.

METERED RATE

(All rates discounted 10%)

	Per 1,000 gals.
For the first 15,000 gals. per month	$0.19
For the next 15,000 " " "	.18
" " " 30,000 " " "	.17
" " " 90,000 " " "	.15
" " " 165,000 " " "	.14
" " " 322,500 " " "	.10
" " " 15,362,500 " " "	.08

For water furnished through metered services outside the city and county of Denver, the following rates shall be charged:

For the first 15,000 gals. per month	$0.25
For the next 15,000 " " "	.24
" " " 30,000 " " "	.23
" " " 40,000 " " "	.21
" " " 400,000 " " "	.20
" " " 500,000 " " "	.175
For all water in excess of 1,000,000 gals. per month	.15

	Monthly Readiness to Serve Charge	Monthly Minimum Charge
½" to ¾" meter	$ 0.85	$ 3.00
¾" meter	1.05	4.00
1" "	1.65	7.50
1¼" "	2.40	14.50
1½" "	3.35	20.00
2" "	5.70	30.00
3" "	12.45	50.00
4" "	21.95	100.00
6" "	49.05	150.00
8" "	86.90	250.00
12" "	195.05	500.00

The minimum monthly bill for each metered service supplying water for domestic purposes shall be $2.00.

General Data:

Population served, 405,000
Services, 81,150
Meters, 2,970
Supply, impounding reservoirs and infiltration gallery
Treatment, coagulation with alum, rapid sand filtration, portion through slow sand filters
Tap water, ⅔—110.16, ppm $CaCO_3$, pH 7.5
⅓— 57.50
Average consumption, 71 mgd
Plant capacity, 200 mgd
Miles of mains, 825
Hydrants, 4,547

Consumer Costs Per Month:

(Based on ⅝" meter charges)

3,000 gals. (400 cu. ft.)	$1.80
5,000 " (667 " ")	1.80
11,315 " (1,333 " ")	2.70

Domestic flat rates represent a 10 per cent reduction which went into effect April 1, 1943. The department is self-supporting with a revenue of $3,273,065 last year. A fund of $1,200,000 has been established for post-war capital construction.

GEORGE F. HUGHES,
Executive Secretary.

New Haven, Conn.

Rates:

First 600 cu. ft. or less	$3.00
Next 4,200 " " per 100 cu. ft.	0.20
" 37,200 " " " " " "	0.18
" 90,000 " " " " " "	0.15
" 870,000 " " " " " "	0.11
" 1,248,000 " " " " " "	0.06
" 2,250,000 " " " " " "	0.05

MINIMUM CHARGE

When the cost of the quarterly consumption through the meter by the regular schedule of quarterly rates is less than the minimum charge:

Meter Size	Minimum Charge	Meter Size	Minimum Charge
⅝" and ¾"	$3.00	3"	$36.00
1"	6.00	4"	54.00
1¼" and 1½"	13.50	6"	75.00
2"	18.00	8"	150.00
2½"	27.00	10"	210.00

PRIVATE FIRE CONNECTIONS

For one private hydrant when connected directly to the company main (per year) $40.00.

Private fire connections:

Under 4" diameter connection	$12.00
For a 4" " "	25.00
" " 6" " "	50.00
" " 8" " "	100.00
" " 10" " "	125.00

General Data:

Population served, 265,000
Services, 44,799
Meters, 27,005
Hydrants, 2,816
Miles of mains, 564
Supply, lakes
Treatment, half through slow sand filters, balance chlorinated only.
Average consumption, 27 mgd

Consumer Costs Per Month:

3,000 gals. (400 cu. ft.)	$1.40
5,000 " (667 " ")	1.87
10,000 " (1,333 " ")	2.60

Rates represent an increase over those published in THE AMERICAN CITY for September 1934. Chief change was the adoption of a revised first block. The new rates have been in effect since 1939.

EDWARD E. MINOR,
Vice-President, New Haven Water Company.

Atlanta, Ga.

Rates:

INSIDE CITY

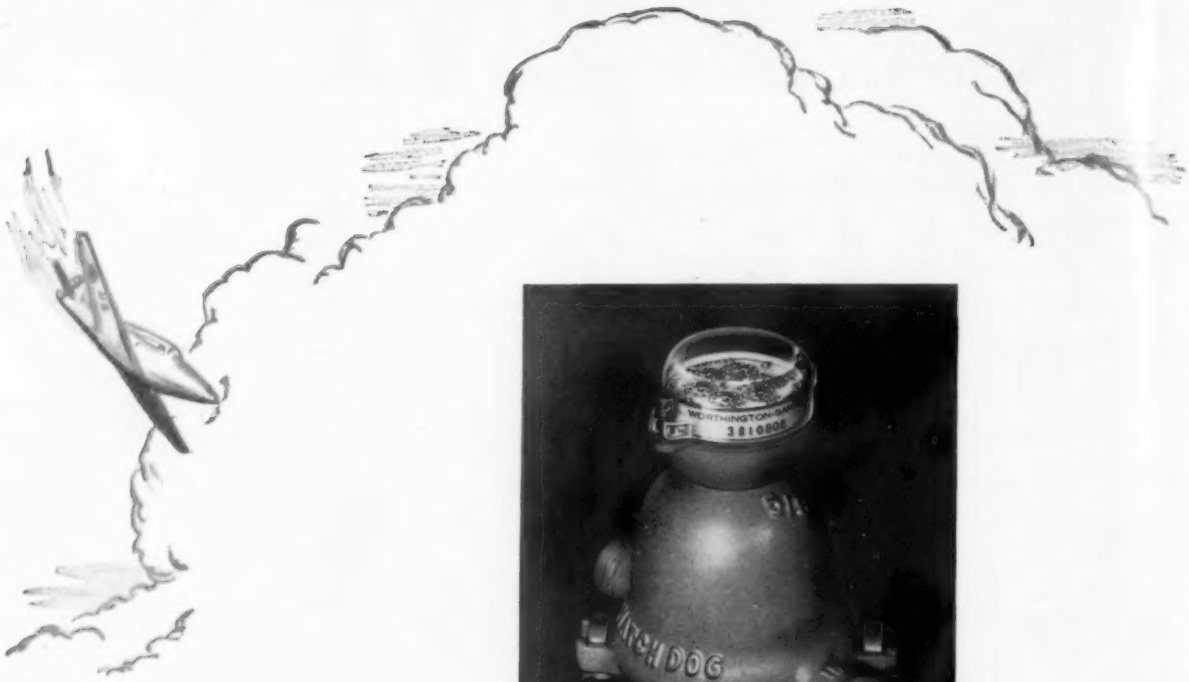
First 800 cu. ft. @ $1.32 gross—$1.00 net per mo.
800 to 5,000 cu. ft. @ $0.30 gross—$0.26 net per 100 cu. ft.
Next 5,000 cu. ft. @ $0.24 gross—$0.20 net per 100 cu. ft.
Next 5,000 cu. ft. @ $0.20 gross—$0.16 net per 100 cu. ft.
Next 5,000 cu. ft. @ $0.18 gross—$0.14 net per 100 cu. ft.
Next 100,000 cu. ft. @ $0.16 gross—$0.12 net per 100 cu. ft.
Next 200,000 cu. ft. @ $0.15 gross—$0.11 net per 100 cu. ft.
Next 200,000 cu. ft. @ $0.14 gross—$0.10 net per cu. ft.
Excess 520,000 cu. ft. @ $0.13 gross—$0.09 net per 100 cu. ft.

The net charges apply on bills paid within 10 days from due date—gross charges apply on bills paid after 10 days from due date. In cases where more than one dwelling, store, or premise is supplied through one meter, a minimum rate of $1.32 per month is charged for each store, dwelling, or other premises supplied.

OUTSIDE CITY

First 800 cu. ft. @ $2.64 gross—$2.00 net per month
800 to 5,000 cu. ft. @ $0.60 gross—$0.52 net per 100 cu. ft.
Next 5,000 cu. ft. @ $0.38 gross—$0.30 net per 100 cu. ft.
Next 5,000 cu. ft. @ $0.34 gross—$0.26 net per 100 cu. ft.
Next 5,000 cu. ft @ $0.32 gross—$0.24 net per 100 cu. ft.
Next 100,000 cu. ft. @ $0.26 gross—$0.18 net per 100 cu. ft.
Next 200,000 cu. ft. @ $0.24 gross—$0.16 net per 100 cu. ft.
Next 200,000 cu. ft. @ $0.23 gross—$0.15 net per 100 cu. ft.
Excess 520,000 cu. ft. @ $0.22 gross—$0.14 net per 100 cu. ft.

The net charges apply on bills paid within 10 days from due date—gross charges apply on bills paid after 10 days from due date. In cases where more than one dwelling, store, or premise is supplied through one meter, a minimum rate of $2.64 per month is charged for each store, dwelling, or other premises supplied.



BRONZE METER CASES HAVE GONE TO WAR

Yes! We continue to manufacture Water Meters, with Army, Navy and Maritime Commission taking preference.

Of course, we are operating under WPB Limitation Order L-154 to conserve copper, and must use substitutions for certain critical materials. That is why Worthington-Gamon Household Meters now come to you with iron casings and glass register boxes.

However the Limitation Order does not affect the interior parts. Therefore the materials in the gear train and measuring chamber remain unchanged.

Accuracy is assured by maintaining the same rigid manufacturing standards as in the past . . . and all parts are interchangeable with your other Worthington-Gamon Meters.

WATCH DOG

WATER METERS

WORTHINGTON-GAMON METER COMPANY
282-296 SOUTH STREET NEWARK, NEW JERSEY

WG3-3

WORTHINGTON-GAMON

Minimum Charges

The minimum charge per month for each service or size of service based on the minimum use of the following amounts of water:

⅝" meter	800 cu. ft.
¾" "	1,000 " "
1" "	1,600 " "
1½" "	2,500 " "
2" "	4,000 " "
3" "	8,000 " "
4" "	10,000 " "
6" "	12,000 " "
8" "	15,000 " "
10" "	25,000 " "
12" "	50,000 " "

Hydrants and Sprinklers

The charges for sprinkler systems are based upon the size of the connection to the city water main and not on the number of sprinkler heads. The rates are as follows:

2" connection	$1.50 per month
3" "	2.50 " "
4" "	3.00 " "
6" "	3.50 " "
8" "	7.50 " "
10" "	10.00 " "

There are no hydrant rental charges, except an annual book charge of $25.00 per hydrant for the purpose of accounting. The Atlanta Water Works being a municipal plant and all revenue from the Department being paid into the city treasury, the city does not collect a hydrant rental from itself. In cases of private fire hydrants, that is, hydrants located within the property lines of industries, the charges are the same as for sprinkler connections.

General Data:

Population served, 360,000
Services (all metered), 64,000
Hydrants, 6,369
Miles of mains, 786
Supply, Challahoochee River
Treatment, rapid sand filtration with alum and lime. Calgon for corrosion control
Raw water, pH 7.0
Tap water, pH 8.7
Average consumption, 43 mgd
Plant capacity, 72 mgd

Consumer Costs Per Month:

3,000 gals. (400 cu. ft.)	$1.00
5,000 " (667 " ")	1.00
10,000 " (1,333 " ")	2.39

This is about a 10 per cent increase over rates published in The Municipal Index for 1934-35 for water used above the minimum. These rates should see us through the present emergency nicely.

W. Z. Smith,
General Manager.

Oak Park, Ill.

Rates:

Class 1. A minimum charge of $2.50 per quarter shall be made entitling the consumer to use 9,000 gallons per quarter. A charge of 27c shall be made for each additional 1,000 gallons, payable quarterly.

Class 2. 26c per 1,000 gallons to consumers of 100,000 to 200,000 gallons per month.

Class 3. 24c per 1,000 gallons to consumers of 200,000 to 600,000 gallons per month.

Class 4. 22c per 1,000 gallons to consumers of 600,000 to 1,000,000 gallons per month.

Class 5. 20c per 1,000 gallons to consumers of over 1,000,000 gallons per month.

All except Class 1 payable monthly.

All water charges shall be due and payable on or before the tenth day after the date when the statements of such charges are rendered and shall become delinquent if remaining unpaid thereafter.

Upon the amount of any statement of charges for water supplied there shall be allowed a discount of 10 per cent provided said statement be paid within ten days of the date it was rendered.

General Data:

Population served, 69,000
Services (all metered), 11,958
Hydrants, 1,136
Miles of mains, 107
Supply, Lake Michigan (purchased from city of Chicago already treated)
Tap water, 130 ppm $CaCO_3$
Average consumption, 5 mgd
Plant capacity, 18 mgd

Consumer Costs Per Month:

3,000 gals. (400 cu. ft.)	$0.85
5,000 " (667 " ")	1.37
10,000 " (1,333 " ")	2.72

Present rates have increased by about one-third over those appearing in The Municipal Index, 1934-35. The plant is self-supporting and should be able to hold the line against rising costs.

M. S. Dutton,
Superintendent.

Pasadena, Calif.

Rates:

(Class A rates include all areas within the city limits. Class B include areas served outside the city.)

Class A

Size of Meter					Minimum Charge
⅝-inch	for first	500	cu. ft.	or less	1.00
¾ "	" "	600	" "	" "	1.20
1 "	" "	700	" "	" "	1.40
1½ "	" "	1,000	" "	" "	2.00
2 "	" "	1,500	" "	" "	3.00
3 "	" "	2,500	" "	" "	6.00
4 "	" "	3,000	" "	" "	9.00
6 "	" "	6,000	" "	" "	18.00

Water used in excess of the minimum and not over 10,000 cubic feet, per 100 cubic feet, 12c. For the next 90,000 cubic feet, per 100 cubic feet, 10c. All water used in excess of 100,000 cubic feet, per 100 cubic feet, 7c.

Class B

Size of Meter					Minimum Charge
⅝-inch	for first	500	cu. ft.	or less	1.25
¾ "	" "	500	" "	" "	1.40
1 "	" "	500	" "	" "	1.75
1½ "	" "	700	" "	" "	2.50
2 "	" "	1,000	" "	" "	3.25
3 "	" "	1,500	" "	" "	6.25
4 "	" "	2,000	" "	" "	9.00
6 "	" "	3,000	" "	" "	20.00

Water used in excess of the minimum but not over 30,000 cubic feet, per 100 cubic feet, 14c. Water used in excess of 30,000 cubic feet, per 100 cubic feet, 11c.

Victory Garden Rates

A special irrigation rate is provided for Victory Gardens of 1,000 or more square feet. In June 2,760 Victory Gardens were served under this special rate. Consumers irrigating such gardens through a domestic meter pay the regular, monthly, domestic rates for all water served in excess of that included in the minimum rate adjusted as follows:

For the first 500 cubic feet 6c per 100 cubic feet if served inside the city and 7c per 100 cubic feet outside the city. For each additional 200 square feet the consumer is allowed to purchase an additional 100 cubic feet of water for 6c inside the city and 7c outside the city. The special Victory Garden rate is not applicable to cases where gardens are not given care and attention or when full irrigation is not used.

Victory Gardens irrigated with water through a separate meter are subject to the following charges:

	Installation Charge	Monthly Rental Charge
⅝-inch meter	$1.00	$ .25
1 " "	1.50	.50
1½ " "	2.00	1.00
2 " "	2.50	1.50

The foregoing charges are in addition to installation of service charge, provided a service connection has not previously been made to the property. The rate per 100 cubic feet of water is:

In Class A area	6c
In Class B area	7c

There is no fire hydrant rental charge within the city, but outside the city the fire protection districts are charged $1.00 per month per hydrant. Within the city the hydrants are installed and maintained by the Water Department at cost plus 10 per cent for administration. This cost is paid out of the general fund or any other fund specifically appropriated for that purpose.

The city pays the Water Department for all water used except for extinguishing fires as follows:

Water for domestic purposes—the regular domestic rate
Water for park purposes and for the steam power plant—the regular domestic minimum, and for all water above the minimum at the rate of 6c per 100 cubic feet
Water used for street sprinkling or flushing and other non-domestic uses—at the rate of 6c per 100 cubic feet

General Data:

Population served	108,000
Number of services	30,080
Number of meters	29,980
Number of hydrants	1,750
Miles of mains	368

Supply: wells, diversion in Arroyo Seco and Eaton Canyons, and diversion from the Colorado River (Metropolitan Water District)
Treatment: chlorinated only
Water: 70-200 ppm $CaCO_3$
Average consumption: 14 mgd

Consumer Costs Per Month:

(⅝" meter, customers in city limits)

3,000 gal. (400 cu. ft.)	$1.00
5,000 " (667 " ")	1.24
10,000 " (1,333 " ")	1.96

These rates represent about a 3 per cent drop under those previously published in May 1935.

The Municipal Water Department is entirely self-supporting, paying the general city and all other city departments for material and services, including office rental in the City Hall. The city's annual proportion of the Metropolitan Water District expense of approximately $400,000 per year is paid entirely from the Water Department's revenues, thereby eliminating an assessment of about 48c per $100.00 valuation on the tax rolls for this purpose.

It is not anticipated that it will be necessary to raise the water rates, even in spite of the rising costs.

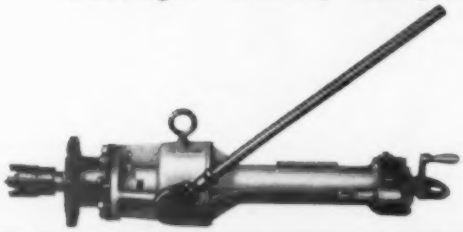
Morris S. Jones,
Chief Engineer and General Manager.

Blueprint for Tomorrow

H-610 Sleeve
H-660 Valve

Everywhere alert officials are making post-war plans now. They are planning for many public improvements, airports, new homes,—expansion on all sides. All these call for water in increasing quantities and that means new mains and many branch connections.

The really satisfactory way to make these connections is to use MUELLER Tapping Sleeves and Valves. All work can be done under pressure at any point in the main without the annoyance of shutting off the water. Because of the unique gasket joints on the sleeves only the ends need be calked. Saves lead. Joint is permanent and water-tight. Actually strengthens the main. The tapping valves meet A. W. W. A. standards. All parts subject to wear are of bronze. The 4-point wedging mechanism assures tight closing without sprung discs or damaged seat rings. . . Invest in MUELLER Valves and Sleeves. In the tomorrow to come they will pay big dividends in long life, and freedom from repairs and costly upkeep expense.



For easy installation of branch lines nothing excels the "C-C" Drilling Machine. It makes cuts from 2" to 12" in any size main. Extra rugged and compact. Easily operated. Positive, automatic feed. Earns its cost over and over in time and expense saved.

ARMY E NAVY

MUELLER CO.

FOUNDED 1857

DECATUR, ILL.

Traffic Control and Facilitation

Conducted by Traffic Control & Facilitation Committee, Institute of Traffic Engineers, 60 John St., New York

William R. McConochie, Chairman; Donald S. Berry, Fred W. Fisch, Maxwell Halsey, Wilfred F. Irvin, Harry C. Koch, Phillip S. Mancini, Claude N. Maurer, W. F. Milner, W. L. Robinson, I. S. Shattuck, George M. Webb

The Trolley Coach—a Public Transport Vehicle of Increasing Usefulness

Each community will have its own particular problems when the automobile comes back. But the advantages of modernization, established by actual experience, are applicable everywhere.

By JOHN A. BEELER

Director, The Beeler Organization, Transit Engineers and Consultants, New York

HOW is Transit going to fare when the automobile comes back to full and unrestricted civilian use after the war? Let us consider particularly urban surface transit rather than rapid transit and interurban services where many specific problems of an entirely different nature exist. What factors are of the greatest importance in meeting automobile competition? What new equipment will assure the most successful traffic producing possibilities during the post-war period?

These and many other important questions face the industry. Each community has its own particular problems. There are certain general principles that have been established by use that, when carefully analyzed, should be helpful as a guide in a broad way. However, there is no hard and fast answer that will serve all purposes. All conditions must be considered.

1942 Figures*

At the close of 1942, the number of surface transit vehicles available to the industry was as follows:

Equipment Employed	
Street Railway Cars	25,449
Trolley Coaches	3,363
Motor Coaches	42,458
Total	71,270

During the year the revenue passengers carried on these vehicles reached an all-time high as follows:

Revenue Passengers Carried	
Street Railway Cars	5,171,000,000
Trolley Coaches	765,000,000
Motor Coaches	5,427,000,000
Total	11,363,000,000

The average rate of fare was practically the same on each type of vehicle, slightly under seven cents, as shown herewith.

Average Fare per Revenue Passenger	
Street Railway Car	6.66c
Trolley Coach	6.89
Motor Coach	6.72

The revenue for the year reached a grand total of $762,300,000, and was divided as follows:

Passenger Revenues	
Street Railway Cars	$344,600,000
Trolley Coaches	52,700,000
Motor Coaches	365,000,000
Total	$762,300,000

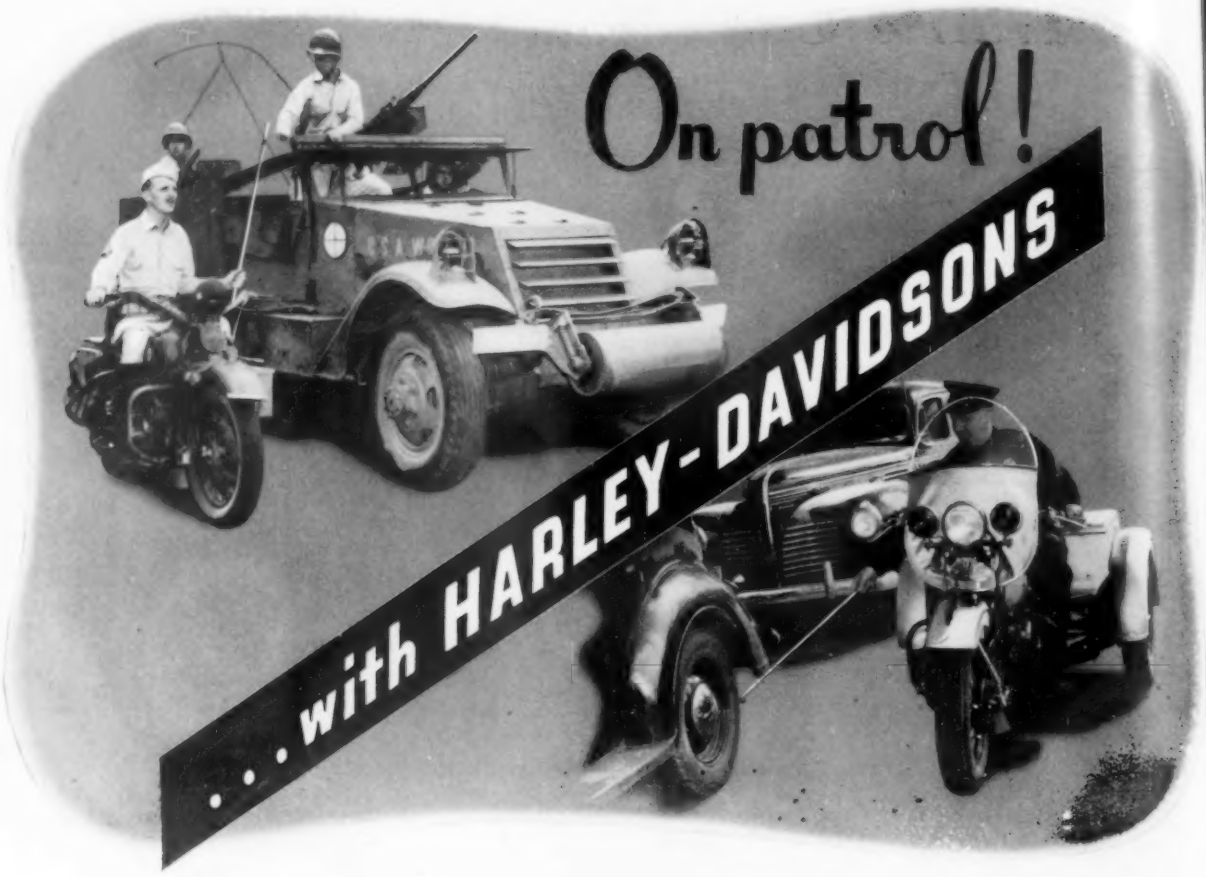
* Figures used exclude suburban operations.

Heavy Loads per Vehicle

The average number of revenue passengers transported during the year by each type of vehicle is of especial interest. The street cars and trolley coaches each far surpassed the motor coaches. The reason is that so many motor coaches are used on the lighter or poorer lines and on feeder lines of various transit systems. However, in many large cities, such as New York, motor coaches operate on lines of very heavy traffic.

Average Revenue Passengers per:	
Street Railway Car	203,191
Trolley Coach	227,475
Motor Coach	127,820

Each street car averaged nearly 80 per cent more revenue passengers than each motor bus. This is not surprising as street cars have an average seating capacity of 40 to 50 passengers, while many of the motor buses run from 18 to 30 seats, which readily accounts for much of this difference. The really surprising feature is that the average trolley coach, with a generally smaller capacity than the street car, topped the average of the latter by more than 24,000 passengers annually. This is partially due to the fact that the trolley coach is speedier and makes more miles per hour than the average street car. It also has the advantage of receiving and discharging its passengers at the curb. Being a relatively new vehicle, a large proportion of all trolley coaches owned are in active operation and hence the number of passengers carried per vehicle is high.



SPEEDING messages to and from combat forces — or speeding up the marking of parked cars with Servi-Car — is taken in stride by rugged, dependable Harley-Davidsons. But these are only two of the many vital services performed by Harley-Davidson Motorcycles on the fighting fronts and home fronts.

The police of more than 3,600 cities, towns, and states who have purchased Harley-Davidson Police Motorcycles, are proving that these reliable and economical machines are invaluable in meeting today's demands for extending the range of traffic control and the protection of wartime industries.

HARLEY-DAVIDSON MOTOR CO., Milwaukee 1, Wisconsin

Harley-Davidson Motorcycles are available now for vital police needs. See your dealer.

HARLEY-DAVIDSON MOTORCYCLES

ARMY NAVY

ON AMERICA'S FRONT LINES OF ACTION

AVERAGE ANNUAL REVENUE BY VEHICLE TYPES

Street Railway Car	$13,541
Trolley Coach	15,670
Motor Coach	8,597

Width Not Restricted

Like the motor coach the trolley coach has the definite advantage of greater flexibility of operation. It weaves in and out of traffic lanes, makes better time, accelerates and decelerates faster. It climbs the steepest grades without undue wear and tear. Its operations also are the quietest of all types.

It has a further advantage in the fact that it is not generally limited to the same over-all width of 96 inches that the motor coach is. This permits the trolley coach to use wider aisles in more commodious vehicles, thus providing increased capacity and greater freedom of passenger movement.

What must transit do to hold its own as our thoroughfares become crowded with new, light-weight, and reasonably priced automobiles? First, it must secure the full cooperation of the local authorities in enforcing strict parking control of all through thoroughfares. Off-street parking must be provided in congested centers. Public conveyances must have the right of way. Street traffic signals must provide for the progressive movement of traffic.

Modernization Pays

Then it must divest itself of all outmoded equipment and lines as rapidly as possible. In order to secure a fair picture of what has happened where trolley coaches were substituted for obsolete street railway cars, the results achieved on four representative city lines have been analyzed. Each line is in a different city; one is in the east, two are in the central states, and the remaining one is in the west. We also go back several years to the prewar period when transit generally was very quiet. Bear in mind that no one of these substitutions involved any change in routing or in the rate of fare. However, each line showed a marked improvement in both revenue and general operating efficiency after the change.

For the sake of brevity, the results of the four lines have been consolidated into the accompanying tabulation which shows the results of the changeover from the last calendar year of street car operations to the first calendar year of trolley coach operations.

It will be noted that the change-over resulted in an increase in the average revenue per mile of route of some 24 per cent. This was accomplished with an increase of but 11 per cent in the vehicular miles which, in turn resulted in an increase from an average of 35.00 cents per car mile to 38.43 cents per mile for the trolley coaches. The latter, however, operated for 25.42 cents per mile compared with 31.80 cents for street cars, thus saving 20 per cent per mile in operating costs.

Lower Investment

Thus, after operating expenses, taxes, and depreciation there remained 13.01 cents net out of each vehicle mile of trolley coach operation compared with 3.20 cents for street car operation, or four times as much. Consequently the trolley coach with its increased patronage and more economical operations, operated at a ratio of 66.1 per cent compared with 90.0 per cent for the street car.

The average investment per dollar of revenue was $4.38 for the street car compared with $1.79 for the trolley coach. This, combined with the increased net from trolley coach operations, indicated an average net return of 18.5 per cent compared with but 2.3 per cent on the street railway investment, or eight times as much.

COMBINED OPERATING STATISTICS
BEFORE AND AFTER SUBSTITUTION OF TROLLEY COACHES
OR STREET CARS ON FOUR CITY TRANSIT SYSTEMS

	Street Cars*	Trolley Coaches*	% Increase or Decrease
Average Annual Revenue Per Mile of Route	$41,450	$52,060	+ 24.1%
Average Annual Vehicle Miles Per Mile of Route	117,992	131,264	+ 11.3
Average Passenger Revenue Per Vehicle Mile—¢	35.00	38.43	+ 9.8
Average Annual Operating Expenses, Taxes, and Depreciation Per Vehicle Mile—¢	31.80	25.42	— 20.1
Average Net Per Vehicle Mile—¢	3.20	13.01	+306.6
Average Ratio of Operating Expenses, Taxes and Depreciation to Annual Revenue—%	90.9	66.1	— 27.3
Average Investment Per Dollar of Annual Revenue†	4.38	1.79	— 59.1
Average Net Return on Investment—%	2.30	18.53	+705.7

* Last full year of street car operation and first full year of trolley coach operation.
† Partially estimated.

Better Transit—Better Cities

This is one answer to the future. The trolley coach, after paying all operating expenses, taxes and depreciation had eight times as much remaining to pay interest, dividends and other deductions as did the street-car lines. The street cars did not average sufficient to pay their interest charges which must have been approximately 6 per cent. In fact, in the past the street-car systems generally have not provided sufficient depreciation and have provided little or nothing for obsolescence. The thing to do is to write off the investment in outmoded plant and equipment now as rapidly as possible while the earnings are temporarily swollen by unprecedented and temporary war activities. Now is the time to plan for the postwar world. Better public transit means better cities.

From *"Passenger Transport"* for November 5, 1943.

Indispensability of Transit

A WELL-PLANNED local transportation system is an indispensable part of a good city plan. The arrangement of mass transportation facilities has a most pronounced effect upon the distribution of population throughout the urban area. Likewise, all of the problems of traffic congestion in the central business district are affected by the design and arrangement of street-car lines and bus lines. If there is to be a good city plan, there must be close coordination in the planning of the mass transportation facilities with other phases of the city plan.

It is most important for municipalities and local transit companies to cooperate to the end that the mass transportation section of the master plan will best serve the needs of the community and be in harmony with the best interests of the local operating company.

HARLAND BARTHOLOMEW,
City Planners, Civil Engineers,
Landscape Architects,
St. Louis, Mo.

Good Transit Makes City More Liveable

THERE is no question but that added development of comfortable, modern, high-speed, local transit is one of the ways in which our cities in the future can be made more comfortable and liveable, and our Urban Land Institute will be behind such a program.

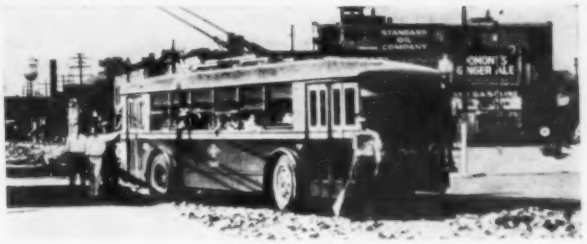
HERBERT U. NELSON,
Executive Vice-President,
National Association of
Real Estate Boards.

MI-CO PARKING METERS

WHEN it comes to low cost maintenance, MI-CO Parking Meters are outstanding! There are several good reasons why this is true. They are different, improved, rugged, have fewer moving parts, simple in construction, and unusually dependable as proved by the records of many installations. We know you will be interested in their complete story. ¶ Until the war is won, the resources of this organization will continue to be engaged in the manufacture of war essentials. As soon thereafter as practicable the production of MI-CO Parking Meters will be resumed. In the meantime we shall be glad to send illustrated literature which gives complete information.

assure LOW COST MAINTENANCE!

MI-CO METER COMPANY
231-239 COURT STREET, COVINGTON, KY.
Division of **THE MICHAELS ART BRONZE CO., INC.**



Cities Must Deal with Transit

By Herman E. Olson
Planning Engineer
Minneapolis, Minn.

TO what extent and in what ways should city planners direct or aid in the working out of a comprehensive modern post-war local transportation system?

In attempting to evolve a basis for an answer to these questions, it is essential to consider the function of local transportation facilities.

The congestion of buildings, activities, and people in the early development of American cities was, in large part, due to lack of, or inadequate provision of, local transport facilities for both people and goods. This determined the congested pattern of early development, and it was not good. These old congested areas became the blighted business, industrial, and housing areas which constitute a large part of the problems of cities today.

City planners are striving to provide more effective layouts for the future development of city areas for business, industry, and housing. The evolution of the new city and its emergence from the restrictive and ineffective patterns of the past require effective transit facilities. As a consequence, planners are compelled to deal with local transportation.

There should be a great measure of cooperation between the technicians of local transportation services and the city planners in working out major traffic facilities. In metropolitan centers, the transportation services are themselves great enterprises of vast financial and technical involvement. City planners, in such cases, must depend to a large extent upon the cooperative assistance of the technicians of the operating companies.

In all such cases and in other areas, it is quite possible that the planners themselves can be of assistance in determining the logical future development of local transportation services. In many cases, the proposals of the planners for the development of areas, and their general knowledge of the factors involved will constitute the more important controls over transportation services as well.

To what extent should the city planner concern himself with the type of local transportation?

This refers to the type of vehicle to be considered for use in particular locations in surface transportation, as between street car, trolley coach, motor bus.

If it were not for the capital costs involved, it would be desirable to adopt for each particular area of service that type of vehicle which would be most efficient under the controlling circumstances. In busy traffic areas, however, unless streets are of sufficient width to permit segregated ways, the fixed track location of the street car is generally an obstacle to the most efficient use of the space.

The war period, with its heavy demands upon local transportation facilities, calling into use every vehicle which can usefully move, is providing an opportunity to liquidate the residual values in much equipment which has been rapidly becoming obsolete. It is very possible that this situation will do more to make possible the transition to new types of transportation vehicles than any factor previously envisioned.

It should be kept in mind that technical development is continuing. In the post-war period, new materials, particularly light metal alloys, will be available in tremendous quantities. All this should have its impact on previous questions as to the efficiency or desirability of particular types of services.

How practical is the job of the city planner as it relates to post-war mass transportation in his city?

As to post-war planning now, it is exceedingly difficult to convince those in charge of important activities of the need for viewing the problems of the future. It is much more difficult to persuade those responsible for the financial solvency of large activities to risk capital in the development of programs designed to improve the social and physical conditions of communities. The city planner is compelled to deal with these problems.

Before the war, the outstanding factor affecting communities was the trend toward increased dispersal of population over wider areas. One result was that, in numerous areas, new systems of transportation were superimposed upon the old system designed to serve compact urban populations. Generally, these new services consisted of bus lines. The gradual dispersal of population over wider areas, likely to continue when the war is over, results in a thinning out of the population load which forms the economic base for transportation service.

Thinner economic support seems to indicate a pressure for more economical types of transportation service. This demand should ultimately require a lower average area cost of capital investment and operation cost per unit of area served. The dictates of these new demands will be the basis for a searching for means, through the use of new materials and methods, for the overall reduction of the average cost of transportation service.

Urban development must serve the needs of the people, and the people will not be subservient to any previous conceptions of patterns of urban design.

The difficulties of the planner are only a reflection of the difficulties of each of the agencies concerned with the city of the future.

Since American enterprise, once aware of problems and their consequent opportunities, has usually solved these problems in a most constructive manner—this being the basis of our progress—I am confident that the local transportation industry will also solve its problem.

FOR SAFETY'S SAKE

Put Street Lighting First On Your List of Postwar Improvements

MANY people will come out of this war with a feeling that they have an immediate right to some of the better things of life for which they've been working and fighting . . . better lighted business and residential sections . . . safer streets and highways . . . more attractive communities in which to rear their families.

Many have been working at night in scientifically lighted war plants from which they have emerged only to find their way homeward made insecure by inadequate street lighting. Others have had friends or loved ones injured in nighttime traffic accidents that might have been prevented by proper street and highway illumination.

All will look, with a new sense of values, on postwar public works projects. And the installation of proper street and highway lighting as soon as possible after the war will not only fulfill many of their needs, but will also serve as tangible evidence that their best interests are being adequately served.

Union Metal street lighting standards will then be available in a complete range of styles and sizes—to harmonize with any architectural theme, and to meet the demands of any street or highway lighting requirement. And, although our present facilities are now being devoted entirely to the production of war materials, the advice and assistance of our street lighting specialists in postwar planning is yours for the asking.

Write today for your copy of catalog No. 71, and plan now to make your town a light, safe, and attractive community when peace comes.

The **UNION METAL**
MANUFACTURING COMPANY · Canton, Ohio
Largest Producer of Street Lighting Standards

Outdoor Lighting

Streets—Highways—Floodlighting

Power Companies Should Help Cities Plan New Street Lighting

Good street lighting encourages general improvement in store and business lighting to the benefit of the city

STREET lighting is expected to take a definite step forward when the war is over. After World War I, a number of cities decided to save money by curtailing street lights. The conclusive result was a direct increase in the number of traffic accidents, injuries, fatalities.

Remembrance of that unhappy experiment has been compounded by widespread experience with dimout and blackouts in the present war. The public now knows that the streets are safer when well lighted. Many city officials know that advancements in luminaire design and street-lighting technique have made it possible to improve lighting conditions vastly, without undue increase in operating cost.

Now is the time to plan the new street-lighting system, as Buffalo has done (See page 103, October issue of THE AMERICAN CITY). Modern equipment makes more efficient use of the light from any sized lamp, and the trend is toward larger lamps.

New Lights Save Power

In the larger cities employing street-lighting engineers and in hundreds of the 2,000 communities owning their electric systems, the drawing up of these plans should be relatively easy. In cities supplied by private power companies, the power companies should make up their minds to lead the thinking, planning, and eventual action toward better street lighting.

The U.S. Census Bureau reported for 1937 that the street-lighting load comprised 270,000,000 kwh on municipal utilities and 1,583,000,000 kwh on private utilities.

Adequate street and highway lighting could well mean a load of 5,000,000,000 kwh. Power company cooperation with city officials, and vice versa, can make the street-lighting load attractive business.

Private Utilities Can Help

The viewpoint of utilities toward street lighting varies, of course. Certain companies recall early political experiences which cause them to regard street lighting as a "hot proposition." Many more companies, however,—and they were increasing in number before the war and will continue to do so afterwards—have the modern veiwpoint that street lighting is remarkably trouble-free business, having a high load factor. They recognize that one street lamp is equivalent to a residence customer without the expenses of transformer, service, line, meter, credit risk and collection problem. The capital investment in a street-lighting unit, therefore, is far less than in a residence installation.

From the power company point of view, the company has pole lines which carry domestic and power circuits. Luminaires can be attached to the poles. This street-lighting load is steady, mostly off the peak, burns 4,000 hours per year—and in a word is profitable.

Twenty-one years ago, Public Service Electric Company of New Jersey is said to have regarded street lighting as a moral obligation. It was disabused of that fallacy by a vigorous street-lighting sales campaign which increased the street-lighting load 66 per cent in three years and won the Coffin Award.

The West Penn Power Company provides another example of objective selling of street-lighting, particularly in the late thirties. One of its projects was the Greensburg, Pa. system which was laid out in detail with the expectation that the program, if accepted, would be installed in five annual steps. The City Council was so impressed with the clarity and frankness of the plan, and the public support behind it, that in November, 1937 the City Council decided to place the entire program into effect immediately—rather than spread the improvements over a five-year period.

A third example of enthusiastic promotion of street lighting is the Metropolitan Edison Company, which installed the fine system in Easton, Pa., that drew people from far and wide to Easton business places at night. Not long afterwards, Philipsburg, N. J., across the river, followed suit, as did other adjacent communities.

These better street-lighting installations had brought to respective power companies greater revenue. For instance, Greensburg had been paying the West Penn Power Company $20,079 per year. With the new system, the power cost was estimated at $32,263, an increase of $12,184 per year, or the gross equivalent of 200 residential customers.

Store Relighting Follows

A progressive street-lighting sales policy, however, pays in more ways than one. Street-lighting promotions are accompanied and followed by store-lighting sales. Obviously, the general improvements of interior business lighting should bring a most attractive volume of new revenue, and at the same time greatly improve the appearance and spirit of the community.

A first-class street-lighting program put over whole-heartedly, can be the spark for general relighting in the town on a modern scale. This would benefit everybody. THE AMERICAN CITY would be glad to cooperate with companies in furthering such projects.

PLAN, TOO, FOR A *Safer City...* TOMORROW

Street lighting deserves a prominent place in every city's Postwar Planning. Whether the need is for streamlined highways, to speed the flow of traffic . . . or for the improvement of run-down areas . . . or again the development of new residential sections . . . modern street lighting is essential to the success of the program.

Good illumination of the streets makes night travel safer for motorists and pedestrians. It discourages crime and violence. Makes the community a better, *safer* place in which to live.

It is not too early *right now*, to start planning your Postwar Street Lighting Program. This should include the modernization of your present system, as well as providing adequate lighting for new projects.

The first step in such a program is to classify all the streets in the city, then establish standards of lighting for each class of thoroughfare. Next, the cost of new equipment, and operating expense of the proposed system, should be determined. With these facts before you, it is a simple matter to budget the program over the desired period of years.

We here at Westinghouse are well along on our own "Postwar Planning" of better street lighting, and will welcome an opportunity to work with you in developing the best program for your city. Westinghouse Electric & Mfg. Company, Edgewater Park, Cleveland, Ohio.

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Lighting Equipment

Five Voices for Street Lighting

"A P.I.C. Throws a Wrench at Modern Luminaires" was published in the September issue of THE AMERICAN CITY, reprinted by the Street and Highway Lighting Bureau, New York, and sent together with the report it analyzed to a number of electric power and safety officials. Many replied, and excerpts from several of the letters are quoted below.

'It is my belief that the average person driving at night does not realize that he is driving faster than justified by the lighting of the roads from his own headlights," writes C. O. Brown, Kansas City Power and Light Company. "A number of us returning from a technical meeting one night, got to talking over the question of highway accidents. As a result of this discussion we made some experiments as to whether it would be possible, at the speed at which we were driving, to stop when the headlights picked up an obstruction in the road ahead. *We found that it was necessary to decrease our speed considerably before we were able to make such a stop.*

"The average driver sitting behind an efficient pair of headlights does not realize that, although he can see no obstruction in the field illuminated by his headlights, there may nevertheless be an object just beyond and too close for him to stop in time to avoid striking it. Again, on approaching an intersection when the atmosphere is clear, the side view from headlights cannot be picked up unless there are marker posts or other objects which can be seen from an intersecting road illuminated by the lights of the car crossing the intersection."

Says J. L. Wehmeyer, Engineer of Safety and Traffic, Wayne County, Detroit, Mich. "The pedestrian is not shown up by automobile headlights when he suddenly appears from the shadows at the side of the highway, or wears dark-colored clothing while walking. It is not just street lighting but the proper kind of street lighting that prevents pedestrian accidents. Another factor is what might be called a tunnel of light from automobile head lamps, which makes only a narrow section of the highway visible to drivers. It is believed by advocates of street lighting that it is the ability of drivers to see objects, or activities, in all directions that makes daylight driving safer than night driving. Street lighting, to a limited extent stimulates daylight conditions and breaks away from the tunnel of light."

Val Roper, Lamp Department of the General Electric Co., Nela Park, Cleveland, Ohio, write: "As an engineer closely identified with automotive lighting developments during the last 18 years, I am confident that continued improvements in headlighting will be realized. Future modifications and improvements, possibly including polarization, will result in still safer seeing. However, headlighting alone — even polarized headlighting—does not offer the complete, practically daytime, seeing that can be obtained with properly designed and installed fixed street- or highway-lighting equipments. For comfort and safety on city streets and on congested highways, under all sorts of weather conditions, we must rely on street and highway lighting to give adequate visibility distance without glare."

Louis J. Schrenk, General Superintendent, Public Lighting Commission, Detroit, says: "It would be a blessing if a headlight could be designed to provide visibility at night where the safety of night traffic would compare reasonably with that provided by daylight. The electrical industry, I am sure, would welcome such a headlight; however, to date the preponderance of automobile accidents occur at night due to the lack of quick and easy seeing. Statistics bear out the statement that invariably where adequate fixed lighting has been installed along the highways, night traffic accidents have been reduced at least 50 per cent, and in many cases considerably more. Where the volume of night traffic is heavy and the accident rate is high, fixed lighting along the highways will provide easy conditions and reduce the night accident rate to a point where it will compare favorably with the day accident rate.

R. C. Salisbury, Director Motor Vehicle Department, Wisconsin says: "I believe it should be quite evident to anyone interested in traffic problems that to light many thousands of miles of rural highway indiscriminately without regard for cost would be foolish. In advocating any engineering improvements, the money available for the project must necessarily be a prerequisite to planning. But to light 20,000 miles of heavy-traffic highways seems a reasonable economic proposal, as pointed out in THE AMERICAN CITY article."

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
ALBERT S. BARD
Counsel,
National Roadside Council

Commercial Zoning District—Driveway Employed in Connection with Industrial Use

PENNSYLVANIA.—*Borough of Prospect Park* v. *McCluskey*, Superior Court, February 1, 1943, reported, 3 Atl. 2d, 179.

This is an action to restrain the defendant McCluskey from using a private driveway as a means of ingress and egress from a brick manufactory for taking in supplies for it, and for hauling the manufactured bricks out. The driveway was in a commercial zone in which industrial uses were not allowed.

It is claimed that the use of the driveway is accessory to the industry and therefore constitutes a violation of the zoning ordinance. With this contention the Court does not agree, saying that no part of the manufacturing process is carried out on the driveway. The general use of a driveway for the passage of trucks is not a use peculiar to industry. Although a driveway may in fact, as in this case, be put to use in connection with an industry, the use of a driveway in general is not exclusively industrial in character. A driveway for the purpose of affording means of passage to trucks is equally advantageous and suitable for commercial as for industrial purposes.

While the public use of a private driveway in a residential district in connection with a public garage located in an adjoining commercial district may so change the character of the driveway as to render its public use prohibitive as a commercial use, it does not follow that the use of a driveway lying within a commercial district merely for the passage of trucks, hauling supplies and finished products partakes so directly and exclusively of industry as to alter the character of the district within which it is situated. Neither can it be seriously said that such use would endanger those interests which the zoning ordinance as an exercise of the police power, is intended to protect.

EDITOR'S NOTE: The distinction as drawn by the court, between a driveway in a residential district used as an aid to a prohibited use elsewhere, and such a highway so used in a commercial district is not convincing. In either case the land would seem to be used for a purpose prohibited in the district.

Nuisance

UTAH.—*Ludlow* v. *Colorado Animal By-Products Co.*, Supreme Court, May 5, 1943, reported 137 P. 2d, 347.

This was an action to enjoin as a nuisance the reconstruction of a rendering plant, destroyed by fire. The trial court found that the plant as operated was a nuisance, but refused to enjoin it, on account of delay in bringing the action; permitting the plaintiff, Ludlow, who owned property in the vicinity, to sue for damages.

The company collected dead animals to render, not only from the vicinity, but from other parts of Utah as well. The plant gave off unwholesome smoke, gases, vapors and stenches. The defendant company urges that there are within a radius of several miles from the plant, factories, railroads, mills, a brickyard and livestock feeding yards, and loading pens of the railroads, etc., rendering the area an industrial rather than an agricultural one; and that these activities also emit obnoxious odors, etc.; so that the plaintiff was not injured more than the general public.

The company also points out that it performs a useful service in disposing of carcasses in an efficient manner instead of allowing them to rot in the fields and become a menace to health.

Such contentions are untenable, the court rules. The fact that there are already in the area conditions obnoxious to some persons does not create a license for the establishment of other, more offensive conditions. The fact that the area is not incorporated in a city or town with zoning regulations does not warrant the establishment of commercial institutions which emit stenches and render life unpleasant to residents there. Nor does the fact that the industry is useful make it proper in an improper place.

Nor, on an examination of conditions in the area, can it be called commercial rather than agricultural. The industries there are essential to the marketing of agricultural products as the region consists principally of farms and homes and other bulidings characteristic of rural life.

The Utah Statutes define nuisance and provide damages for it, as anything "offensive to the senses" or which "interferes with the comfortable enjoyment of life and property," etc. It could hardly be urged that the maintenance of a condition which is rendered illegal by statute under the police power is lawful merely because it is the result of the operations of a lawful industry; if the industry produces foul odors it must be placed where it will not result in injury to the property of others.

The measure of damage to the plaintiff is the difference in market value of each area affected without the stench nuisance as compared with its value as affected by such odors, and even if the productivity of the land is not diminished by the recurring nuisance, the sale value may be impaired. Ordinarily people are not willing to pay as much for property plagued with a nauseating stench as for property free from such conditions. Nor are plaintiffs precluded from suing for the reason that they occasionally sold dead animals to the company. The plant was not constructed solely to handle animals which died in the neighborhood, nor operated for its sanitary convenience, but as a commercial institution to gather as much business from as wide an area as possible.

Boards of Appeal in Massachusetts

The Planning Forum, published by the Massachusetts State Planning Board, on July 1943 issued a Board of Appeals number, the purpose and content of which Miss Elizabeth M. Herlihy, Chairman of the Board, in her introduction to it, summarizes as follows:

"While zoning plans have been in operation in this Commonwealth for nearly a quarter of a century, therefore, and while boards of appeals have been functioning for nearly a similar period of time, this Forum issue is the first attempt, so far as is known, to bring together within the covers of a single volume complete information with regard to the provisions of the law under which such boards are established, their personnel, a brief account of their activities, and other related material."

Putting Municipal Finances in Order

POINTING out that efficiency in wartime local government activities is excellent preparation for events after the war, the Municipal Finance Officers Association has issued a statement, dated October 31, on "Municipal Fiscal Policies for the War Period." Among the policies advocated are:

Post-war plans of a municipality should be so designed that they may be carried out without federal aid. However, if federal aid makes expansion of the plans possible, future operating costs as well as original outlays, must be considered.

The necessary state legislation for post-war financial programs must be enacted now. Localities must take the initiative in getting the laws they need.

Control of land use is essential to orderly development of a community. Therefore planning, zoning, and special assessment laws should encourage desirable development and prevent unnecessary and undesirable real estate exploitation.

The greatest problem facing the larger cities is the reconstruction of their downtown or other blighted areas. Cities should not tackle the minor problems and overlook the most important.

Deferred maintenance of present facilities must be undertaken before new capital works. Therefore, municipalities need an estimate of such maintenance and they should set aside in a liquid reserve the money represented each year by deferred maintenance.

The complete statement is obtainable from MFOA, at 1313 East 60th Street, Chicago 37, Ill.

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Conventions—When and Where

Jan. 10-11—Worcester, Mass. (Correction)
MASSACHUSETTS STATE ASSOCIATION OF SELECTMEN. State-wide Town Meeting. (Hotel Bancroft.) Exec. Sec., Axel E. Zetterman, Ashland, Mass.

***Jan. 15—Columbia, S. C.**
MUNICIPAL ASSOCIATION OF SOUTH CAROLINA. Annual Meeting. Exec. Sec., J. N. Caldwell, University Campus, Columbia, S. C.

***Jan. 18—New York, N. Y.**
AMERICAN WATER WORKS ASSN.—NEW YORK SECTION. Mid-Winter Meeting and War Conference. (Hotel Commodore.) Sec., R. K. Blanchard, 50 W. 50th St., New York 20, N. Y.

Jan. 19-21—New York, N. Y.
AMERICAN SOCIETY OF CIVIL ENGINEERS. Annual Meeting. Sec., George T. Seabury, 33 West 39th St., New York 18, N. Y.

***Jan. 19-21—Chicago, Ill.**
UNITED STATES CONFERENCE OF MAYORS. Annual Conference. (Hotel Stevens.) Acting Exec. Dir., Harry R. Betters, 730 Jackson Pl., N. W., Washington, D. C.

***Jan. 21—New York, N. Y.**
NEW YORK STATE SEWAGE WORKS ASSN. Annual Convention. (Hotel McAlpin.) Sec.-Treas., A. S. Bedell, c/o State Dept. of Health, Albany, N. Y.

***Jan. 24-26—Lafayette, Ind.**
PURDUE ROAD SCHOOL. (Purdue Memorial Union.) R. B. Wiley, Head, School of Civil Engineer, Purdue University, Lafayette, Ind.

Jan. 31-Feb. 4—College Station, Texas
TEXAS WATER WORKS AND SEWERAGE SHORT SCHOOL. (Texas A. & M. College.) Sec., V. M. Ehler, Austin, Texas.

Feb. 9-10—Chicago, Ill.
AMERICAN CONCRETE PIPE ASSN. Annual Convention. (Hotel Drake.) Sec., M. W. Loving, 33 West Grand Ave., Chicago, Ill.

***Feb. 9-10—Roanoke, Va.**
SOUTHEASTERN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual Meeting. (Hotel Roanoke.) Sec.-Treas., Berrien W. Davis, State Maintenance Engineer, Raleigh, N. C.

Feb. 17-18—New York, N. Y.
ASSOCIATION OF HIGHWAY OFFICIALS OF NORTH ATLANTIC STATES. Annual Meeting and Conference on Post-War Program and Related Problems. (Hotel Pennsylvania.) Sec.-Treas., A. Lee Grover, c/o State Highway Dept., Trenton, N. J.

***Feb. 28-Mar. 1—Grand Rapids, Mich.**
CONFERENCE ON HIGHWAY ENGINEERING. Annual Conference. (Hotel Pantlind.) Sec., R. L. Morrison, University of Michigan, Ann Arbor, Mich.

***March 15-17—St. Paul, Minn.**
AMERICAN WATER WORKS ASSN.—MINNESOTA SECTION. Annual Conference. (Hotel Lowry.) Sec.-Treas., R. M. Finch, Wallace & Tiernan Co., Inc., 416 Flour Exchange, Minneapolis, Minn.

***April—Washington, D. C. (Date later)**
NATIONAL FIRE WASTE COUNCIL. Annual Meeting. (Chamber of Commerce of U. S. Bldg.) Sec., Paul L. Hardesty, 1615 H Street, Washington, D. C.

***April 13-14—Chicago, Ill.**
MIDWEST POWER CONFERENCE. (Palmer House.) Dir., Stanton E. Winston, Illinois Institute of Technology, Chicago, Ill.

***April 19-20—St. Louis, Mo.**
MISSOURI ASSOCIATION OF PUBLIC UTILITIES. Annual Business Meeting. (Hotel Jefferson.) Asst. Sec., Jesse Blythe, 101 West High St., Jefferson City, Mo.

***April 26-28—Jackson, Mich.**
AMERICAN WATER WORKS ASSN.—MICHIGAN SECTION. Annual Meeting. (Hotel Otsego.) Sec., M. N. Gerardy, c/o Dept. of Water Supply, Detroit, Mich.

* First appearance of notice on this page.

Municipal Bond Market

CALLING attention editorially to a slump in municipal bond prices during November, *The Bond Buyer* for November 27 says that this condition "has encouraged some commentators to make the definite prediction that the long decline of interest rates has ended. In fact, outside of municipal circles, those whose opinions carry much weight are expressing such an opinion. There is also the other school of thought, those who believe the current reaction in municipals is due merely to the coincidence of a fair amount of institutional liquidation and new financing at the moment when securities markets generally were experiencing a 'peace scare.' . . .

"Whether or not the war ends soon and conceding that one result of such an event would be a reduction in income tax rates, it seems to us," says *The Bond Buyer*, "that the supply and demand factor so far as municipals are concerned is bound to be influenced greatly by the redemption by the federal, state and local governments of an amount of bonds now outstanding that at least will be equal to the maximum supply of new bonds which might be expected to come out in the early years following the end of the war. In 1944 and 1945 redemptions of fully tax-exempt federal, federal agency, and municipal bonds will amount to approximately $2,000,000,000 each year. In addition over $9,500,000,000 partially tax-exempt federal and federal agency obligations mature or reach callable dates and, under present Treasury policy, will disappear from the market.

"Barring an adverse outcome of the Treasury's attack on the tax immunity of municipals, the supply and demand factor would appear to offer the municipal market a great measure of protection in the early post-war period when other factors which have contributed to current high prices will probably go into reverse."

Some recent sales of new issues as reported in November issues of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$198,000	Erie, Pa., School, Refunding	0.75	5-5 Avg.	0.713
175,000	Marinette, Wis., Refunding	1.25	6.33 Avg.	1.152
150,000	Cleveland, Ohio, Paving	1.25	2-11 Ser.	1.234
4,790,000	Nashville, Tenn., Electric Power Refunding Revenue, Series A	1.40	7-13.5 O.-A	1.385
1,850,000	Baltimore, Md., Third School Loan, Public Library and Third Sewer Loan	4	20-24 Ser.	1.56
2,030,000	Tacoma, Wash., Light and Power Revenue of 1943	1.5	11-14.85 O.-A.	1.606
1,000,000	Norfolk, Va., General Improvement	1.80	10-19 Ser.	1.788
228,000	Mayfield, Ky., Electric Light and Power Revenue Refunding	2	15.16 Avg.	1.875
110,000	Albuquerque, N. M., Refunding	1.20	1-10 Ser.	1.191
1,360,000	Chattanooga, Tenn., Electric Power Refunding Revenue	2	7-25.16	2.18
300,000	Camden, N. J., Refunding	2.25	12.75 Avg.	2.22

City Manager Appointments

ARNOLD L. BALLARD has succeeded Herman P. Bell at Washburn, Maine.

P. H. BEAUVAIS, former manager of Manistee, Michigan, 1918-21, Royal Oak, 1921-25; Manistique 1936-42, has been appointed city manager of Alma, Michigan.

G. A. BUCK has been appointed acting municipal manager of Northfield, Vermont, to serve until the election next spring.

R. J. BRULE, who has been on leave for military service, has returned to his post as city manager of Navasota, Texas.

W. FRANK CHAPMAN, town clerk and treasurer for the past 18 years, has been appointed manager of Salem, Virginia.

E. A. DUNN, previously an employee of OPA, Fresno office, has been appointed city manager of Visalia, California, to succeed J. J. Philippe.

JOHN R. HAMMAN, former maintenance superintendent for the state highway department, has been appointed acting manager of Mangum, Okla., while Chester B. Lewis is on leave to the School of Military Government.

J. D. LAMOREAUX is acting manager of Lapeer, Michigan.

R. B. JOHNS is city manager of Farmville, Virginia. He succeeds George F. Crichton.

J. W. LEWIS, city secretary, has been appointed acting manager of Lufkin, Texas.

CHARLES D. MANSON has replaced Frank W. Voisine at Manistique, Michigan.

C. C. MASSEY, city manager of Salem, Virginia, since April 1938, has been appointed county manager of Henrico County, Virginia.

MRS. CHRISTINE RAYNSFORD has been appointed manager of Monterey, California, to succeed B. J. Pardee.

WINSTON SMITH has replaced Bruce May as city manager of Midill, Oklahoma.

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Executive Director, International City Managers' Association.

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Municipal Law Notes and Decisions

Prepared by National Institute of Municipal Law Officers, Washington, D. C.
Charles S. Rhyne, Executive Director

Annexation—Right of Protest as to Three Separate Subdivisions

In suit protesting a proposed annexation of three separate subdivisions to the city, held that protestants residing in one subdivision were authorized by statute to protest the annexation of their own subdivision as against city's contention that the subdivisions comprised one tract of land and therefore the protestants should not be allowed to protest the annexation of one of them. *Sullivan* v. *City of Louisville*, 173 S. W. (2d) 981 (Ky. June 1, 1943).

Appropriation—Failure to Provide for Retainer Fee in Budget

Where city appropriated $10,000 for intended litigation which was set aside by judicial action, a later resolution to pay $7500 of such sum as a retainer fee is invalid under statute which prohibits municipalities from spending money for which no appropriation is provided. *Murphy* v. *Town of West New York*, 34 Atl. (2d) 78 (N. J. Oct. 15, 1943).

Automobiles—Presence of Name on as Evidence of Ownership

Where automobile which collided with horse-drawn vehicle in which plaintiffs were riding bore the name of the city with "Bureau of Parks" added, held that the presence of the defendants name on the vehicle raises a rebuttable presumption that the vehicle is owned by the defendant even though there is uncontradicted evidence to the contrary. *Sweeney* v. *City of Pittsburgh*, 34 Atl. (2d) 67 (Pa. Oct. 15, 1943).

Civil Service—Authority of Court to Pass on Correctness of Answers Made Up by Commission

In proceedings to compel Civil Service Commissioners of the City of New York to place petitioners name on the civil service list, held that the Court cannot pass on the correctness of categorical answers as determined by the commission nor require the commission to increase petitioner's rating nor alter his relative eligibility. *Koniecgny* v. *Streeter*, 43 N. Y. S. (2d) 820 (N. Y. Sup. Ct. Erie Co. Sept. 8, 1943).

Condemnation—Employment of Appraiser by Corporation Counsel

In action against City for services allegedly rendered by plaintiff as an appraiser of property to be condemned by defendant, the city cannot deny liability on the ground that the corporation counsel had no authority to hire plaintiff since the corporation counsel was authorized to proceed with the condemnation and this included the employment of the appraiser. *Ely* v. *City of Detroit*, 10 N. W. (2d) 892 (Mich. Sept. 7, 1943).

Drug Stores—Fixing Closing Hours of

Ordinance which fixes closing hours for drugstores, adopted as a war measure and in the interest of public health and safety, was upheld on appeal as not being an arbitrary invasion of property rights in violation of the 14th amendment. *Spiro Drug Service, Inc.* v. *Board of Comr's of Union City*, 33 Atl. (2d) 872 (N. J. Ct. of Err. and App. Sept. 16, 1943).

Gambling—Numbers Game as Game of Chance

Where an ordinance makes it unlawful to engage in a game of chance, there must be proof that a "number game" is a game of chance in order to sustain a conviction on a charge of unlawfully engaging "in a game of chance for money, to wit, number game." *City of Toledo* v. *Johnson*, 50 N. E. (2d) 675 (Ohio App. June 1, 1938).

Licenses—Refusal of to Chinese Distributor of Milk—Reasons for

Chinese distributor of milk, upon being refused license to distribute milk and cream by San Francisco department of health should have been apprised of every reason for refusal of license and not merely one upon which license was formerly refused. *Fong Bros.* v. *Geiger*, 140 Pac. (2d) 464 (Cal. App. Aug. 11, 1943).

Licenses—Revocation of for Unlawful Conduct of Business—Standard of Guidance

In proceeding to revoke used automobile dealer's license on ground that dealer had unlawfully altered signed purchase orders and had made misrepresentations as to terms under which vehicles were taken out for trial, held that Board of Police Commissioners power to revoke used automobile dealer's license if dealer should violate any ordinance or should conduct business unlawfully is not void for lack of a standard of guidance. *Vaughn* v. *Board of Police Com'rs of City of Los Angeles*, 14 Pac. (2d) 130 (Cal. App. July 23, 1943).

Liquor—Ordinance Prohibiting Dancing in Places Where Sold

Ordinance which prohibits musical entertainment and dancing in places where intoxicating liquor or nonintoxicating beer is sold is a valid exercise of police power, but does not apply to rooms in the same building which are no part of the business premises where the beverages are sold. *Zinn* v. *City of Steelville*, 173 S. W. (2d) 398 (Mo. July 6, 1943).

Officers and Employees—Refusal of Board of Transporation to Adjourn Hearing Pending Disposition of Criminal Charge

The court will not order the reinstatement of a discharged bus maintainer merely because the city board of transportation refused to adjourn his hearing on charges of insubordination and misconduct pending disposition of a criminal charge of assault based on the alleged misconduct, as this did not constitute an abuse of power by the board. *Application of Sheehan*, 43 N. Y. S. (2d) 778 (N. Y. Sup. Ct. Kings Co. July 9, 1943).

Pin Ball Machines—Destruction of by Police Officers—Jurisdiction of Court

Court cannot control the discretion of the City Manager as to destruction of pin ball machines merely because ordinance provides that every police officer shall be an ex officio deputy bailiff, since such an ordinance only gives court jurisdiction when the officers act in this capacity. *City of Cincinnati* v. *Flaherty*, 50 N. E. (2d) 373 (Ohio App. March 8, 1943).

Sewage—Suit to Enjoin City from Pollution of River

In action to restrain city from discharging sewage into a river on which plaintiff was a riparian owner where city brought suit to restrain plantiff from subjecting it to multiplicity of suits, held that plaintiff's move to convert her action from equity to law is proper, even though it will defeat city's equitable suit, since plaintiff's move to amend was made before city's action. *Hossack* v. *City of Sioux Falls*, 10 N. W. (2d) 751 (S. D. Aug. 4, 1943).

Sewer—Tenant Primarily Liable for Service Charge

Although prior to amendment of ordinance no liability was imposed on owner for service charge for use of the sewer system by the tenant, amendment fixed liability in express terms on the owner, although tenant was still primarily liable. *City of Leeds* v. *Avram*, 14 So. (2d) 728 (Ala. June 10, 1943).

Sidewalks—Liability of City for Ice on

In action to recover damages for injuries sustained by slipping on a sidewalk covered with snow and ice, held that city is not liable where the accumulation is from natural causes even though by usage it is uneven and in hillocks. *Caspar* v. *City of Chicago*, 50 N. E. (2d) 858 (Ill. Sept. 27, 1943).

Sidewalks—Pedestrian Injured by Pitched Ball—Game Permitted by City

It is question for jury whether City of Syracuse was liable for injuries to pedestrian on a sidewalk who was struck by ball pitched from park where a soft ball game which was permitted by city to be played on that field was in progress. *Jones* v. *Kane & Roach*, 43 N. Y. S. (2d) 140 (N. Y. Sup. Ct. Onondaga Co., July 23, 1943).

Wages—Meaning of "Prevailing Wage" in Statute

In mandamus proceeding by city to compel controller to approve wage claims of motormen, conductors and street car and bus operators, where controller claimed that the rates fixed in the ordinances were not "in accord" with the "prevailing wage" as fixed by statute held that this requirement does not mean that compensation be identical with or not higher than the prevailing wage but that there be a just correspondence between the two. *City and County of San Francisco* v. *Boyd*, 140 Pac. (2d) 666 (Cal. Aug. 10, 1943).

Water—Liability of City for Break in Main—Knowledge of Defective Condition

In action against city to recover for damage to plaintiff's property caused by the breaking of a water main, held that city is liable for negligence since it knew that dangerous situation existed due to steam company's main touching the bottom of the city's main but failed to take any action to remedy it. *Lauer* v. *City of New York*, 43 N. Y. S. (2d) 251 (N. Y. Sup. Ct., New York Co. Feb. 9, 1943).

Workmen's Compensation—Cerebral Hemorrhage—Failure to Establish Causal Connection

Automobile mechanic employed by county cannot recover workmen's compensation for cerebral hemorrhage which occurred after completing day's employment where evidence failed to establish that "accident" happened while claimant was using a crow bar to open drain and let water out of grease pit in county's garage. *Douglass* v. *Beaver County*, 33 Atl. (2d) 461 (Pa. Super Ct. July 16, 1943).

SOFT, CLEAR WATER IN 8 MINUTES BY NEW SPACE-SAVING METHOD

FIELD REPORT

THE PERMUTIT COMPANY, NEW YORK, N. Y.

Equipment: "SPIRACTOR" COLD LIME WATER SOFTENER
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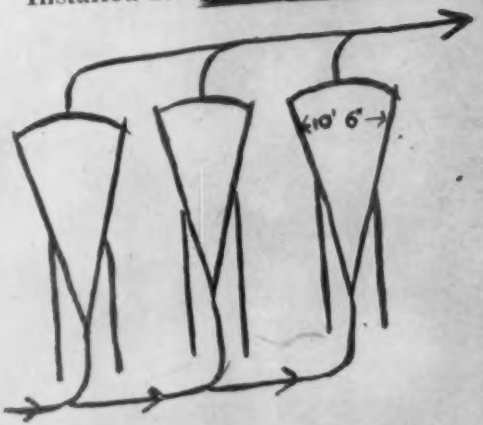

Note small area for daily capacity of 3,000,000 gallons!

This plant has more than met specifications. Detention time is only 8 minutes. There is no sludge. Softened effluent is so clear that filters have little to do. Engineer much pleased at fine results and simplicity. Simply turned on the water and the chemicals — no time wasted in getting started.

WATER ANALYSIS	RAW WATER	SPIRACTOR EFFLUENT#
Total Hardness	180	40
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WATER CONDITIONING HEADQUARTERS

Film Throws Light on Cause and Cure of Juvenile Delinquency

Scene in Mayor's office—"Youth in Crisis"

HOW intelligent communities are stemming the rising tide of juvenile delinquency is told dramatically in the current March of Time film, "Youth in Crisis."

Throwing light on startling temptations which beset today's wartime youth, the film shows some of the wholesome counteracting influences provided by day nurseries, discussion groups, the use of school facilities after hours, YMCA's, boy's clubs, "dry" night clubs run by the youth themselves, 4-H clubs, and victory gardening.

A scene of special interest to readers of THE AMERICAN CITY is one which points out that, contributing to the gravity of the situation is the tendency of some municipal officials to regard socially protective measures as a luxury and to sacrifice them for the sake of wartime economy. This budget discussion takes place:

COUNCILMAN "A"—"Mr. Mayor, we've still got to cut $25,000 off this budget."

COUNCILMAN "B"—"It seems to me that with all the other demands we've got to meet, the time has come to cut down on the Children's Court. We've been paying out an awful lot of the taxpayers' money for probation officers and child psychiatrists."

COUNCILMAN "C"—"I say if we cut down on the Children's Court, we'll have a crop of criminals in a few years, that'll cost us about ten times what we're paying out now."

Chamber of Commerce and City Officials Cooperate

TO the Editor of THE AMERICAN CITY:

Cooperation with the city government in perfecting an organization to study and prepare for post-war problems has been the chief aim of the Post-War Planning Committee of the Auburn Chamber of Commerce since its appointment in July of this year. We were glad to note a statement along that line of thought by Eric A. Johnston, President of the Chamber of Commerce of the United States, on the front cover of the November issue of THE AMERICAN CITY.

In October our committee recommended to the Auburn city government that a City Planning Commission be established, its members to serve without pay; further that two members of such a commission should be designated to serve on the Chamber of Commerce committee. A public hearing was held, at which no objections to the recommendation were voiced. The City Council unanimously voted to establish a Commission, as recommended, and appointments are to be made by the Mayor.

Our committee has been set up on a sub-committee standard, covering: Projects, Housing, Transportation, Industry, and Retail Business. Each sub-committee is responsible to the central committee. The sub-committees are making initial studies and surveys. The chairmen of each sub-committee will make preliminary reports at a meeting of the central committee in mid-December.

EARL A. RACE,
Secretary, Auburn Chamber of Commerce.
Auburn, N. Y.

War Has Brought No Blackout to British Humor

(Quips and Cartoons from the October, 1943 issue of "Local Government Service")

Post War Aims
Liberty, Equality, and Maternity

Cheap at the Price
A Berlin worker asked a bank clerk how to invest his life savings of 1,000 marks. "Buy State bonds," he was advised. "But supposing the State goes broke?" he asked.

"You forget the Nazi party will see that it doesn't." "But," persisted the man, "supposing the Nazi party collapses?"

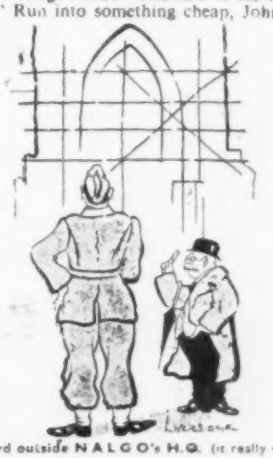
"Well," was the answer, "isn't that worth 1,000 marks?"

"Can you beat it—no says next week he's to teach us artificial perspiration!"

(Sent by airgraph by an old friend of this page, Jack Carver of Walsall, now with the R.A.F. in India)

The Last Straw!
I've got a new lodger. He's not only an Irishman but he's a Socialist, and he's not only a Socialist but he's an atheist, and he's not only an atheist but he's a *vegetarian!*

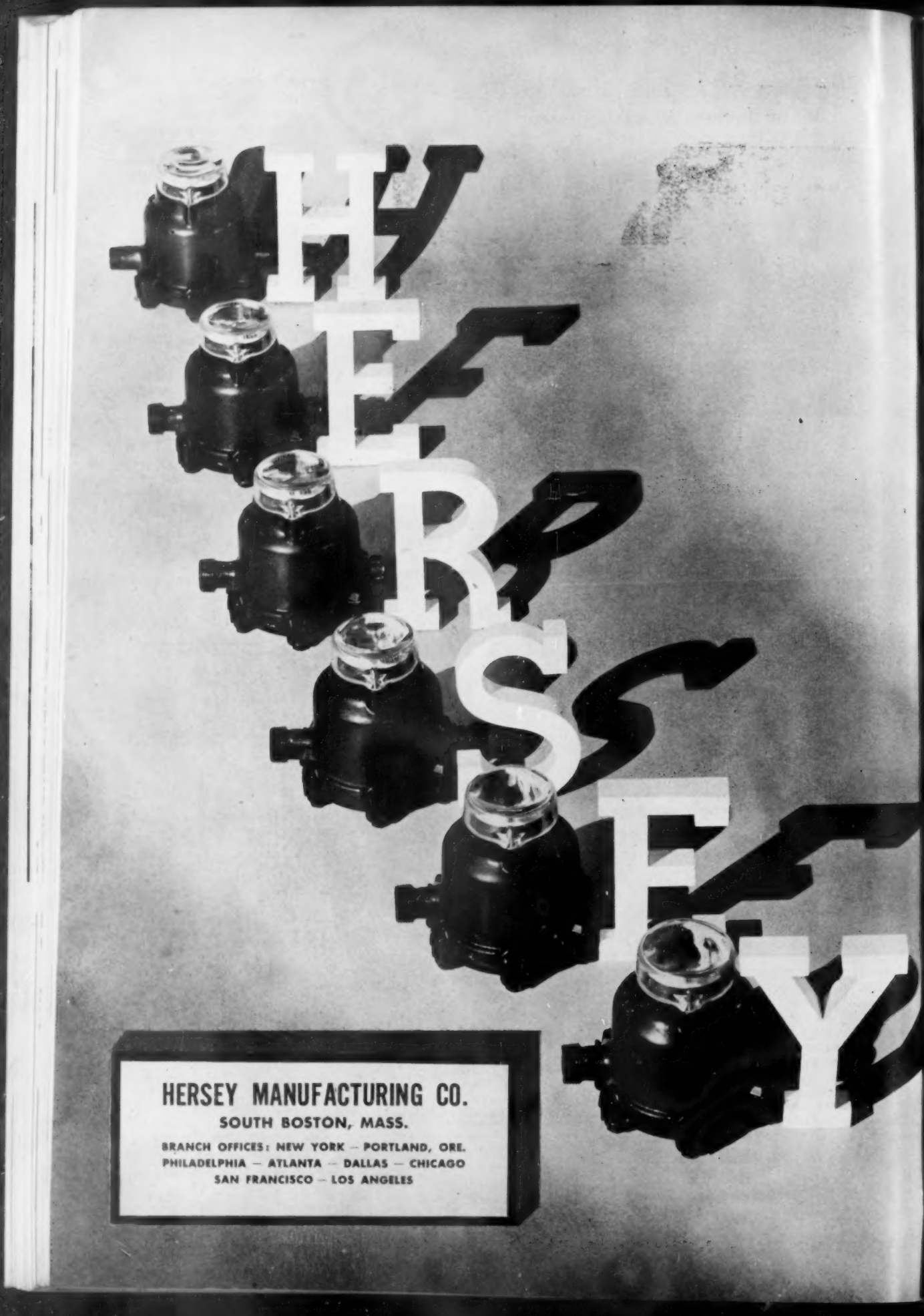
Legal Advice
The story is told of the famous Lord Brougham that when his horses once bolted with him in the Strand he thrust his head out of the carriage window and said to his coachman, "Run into something cheap, John."



Heard outside NALGO's H.Q. (it really was!)
"That—why that's the Victoria Tower."
"You don't say! So that's where your Queen Victoria was beheaded!"

Brevities
Rules are the means by which the unintelligent apply principles.

"How hard do I have to hit it to knock it into the water?" asked the nervous wife of the Mayor at her first ship launching.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Municipal and Civic Publications

Measuring Municipal Activities

Measuring Municipal Activities.—By Clarence E. Ridley and Herbert A. Simon. The International City Managers' Association, 1313 East 60th St., Chicago, Ill. 1943. 75 *pp.* $2.00.

Revised edition of the monograph first issued in 1938, summarizing measurement techniques and criteria for appraising municipal administration. This edition has been reprinted in substantially its original form with the addition of an introduction in which developments of the past five years are discussed, and with a few editorial changes in the body of the work to clarify some of the more obscure passages. Nearly 100 new items have been added to the bibliography, and an almost equal number of earlier publications have been deleted.

Public Opinion on Post-War Problems

Public Thinking on Post-War Problems.—By Jerome S. Bruner, Associate Director, Office of Public Opinion Research, Princeton University. National Planning Association, 800 21st St., N. W., Washington 6, D. C. October 1943. 36 *pp.* 25c.

Report of a public opinion poll made for the National Planning Association by the Office of Public Opinion Research, which shows the questions asked, presents the answers graphically, and summarizes the results. The poll covered: full employment planning, reconversion, demobilization, aid to soldiers, post-war purchasing power, and social security.

Housing Bibliography

Housing—A Selected List of Readings for Teachers and Students.—Compiled by Blizabeth M. Carey. U. S. Federal Public Housing Authority, Washington, D. C. 1943. 10 *pp., mimeo.*

This annotated bibliography for teachers and students represents a selection of references obtained from housing literature from 1938 through the first half of 1943. The material in general refers to the program of the United States Housing Authority; and also includes references to the current war program of the National Housing Agency.

Water-Works and Forest-Fighters Manuals

Two publications from the New York State War Council, Office of War Training, Albany, New York. April 1943.

Manual for the Emergency Sanitation and Water Auxiliary Training Program.—365 *pp.*

Manual contains information on the organization and training of emergency sanitation services, water-main repair crews, and waterworks auxiliaries. Should be valuable to all agencies dealing with sanitation and waterworks problems.

Forest Fire-Fighters Handbook.—35 *pp.*

Very readable pamphlet concerning information and instruction on the ways of preventing forest, brush, and grass fires; and the approved methods of handling and suppressing these fires.

Wood

Wood as an Engineering Material.—By L. J. Markwardt. Edgar Marburg Lecture. Reprint from Vol. 43, 1943 of the Proceedings of the American Society for Testing Materials, 260 So. Broad St., Philadelphia 2, Pa. 1943. 58 *pp.* $1.00.

According to the author, "Wood was among the first structural materials in the primitive world; yet significantly, it still maintains an indispensable place in the modern age . . . it presents a greater complexity and variety of problems than perhaps any other single engineering material." The report describes its formation, types, structure, properties, mechanics, structural uses, modification of properties, destructive agencies, and future.

Race Riots

Race Riot.—By Alfred McClung Lee and Norman Daymond Humphrey. Dryden Press, 103 Park Ave., New York City. 143 *pp.* $1.50.

The authors, who both witnessed the Detroit riots of the week of June 20th, describe vividly what happened there to bring about the death of thirty-four Americans and the wounding of more than one thousand others. More important, they attempt to analyze the causes of race riots, and present a program for community action to prevent such outbreaks in the future. Specifically, in cities with biracial problems, they advocate, the organization of two bi-racial committees, one official and one civic, which would have three main functions: (1) constant fact finding of the state of Negro-white tensions, (2) constant integration and analysis of facts, and (3) constant translation of analyses into action, such as: requests for official action, publicity, public education, pressure activities, and bi-racial experiences.

Building Codes

Building Codes.—Recommended by the National Board of Fire Underwriters, 85 John St., New York City. 1943. 406 *pp.*

This revised edition of the National Board building code regulates all matters relating to the construction, alteration, or demolition of buildings; as much of the equipment, occupancy, and maintenance as must be considered in the planning; and as much of the equipment as must be installed as the building operation progresses. Provided a proper degree of health and safety is attained, it does not attempt to dictate choice of materials, assemblies, or designs.

A Suggested Basic Building Code for Washington Cities.—By Alfred Miller and Joshua H. Vogel. The Bureau of Governmental Research, University of Washington, Seattle, Wash., in coperation with the Association of Washington Cities. July 1, 1943. 26 *pp.*

This building code attempts to eliminate all inconsequential details, and to clearly define the responsibilities of the architect, engineer, and builder. Its distinctive features are: the requirement that a licensed engineer or architect design and supervise the construction of all structures which may be used by the public, and the provision for the consummation of the duties under the building permit by the issuance of a permit for use.

Population Estimates

Estimates of Future Population of the United States 1940-2000.—*By Warren S. Thompson and P. K. Whelpton for the National Resources Planning Board. United states Government Printing Office, Washington, D. C. August* 1943. 137 *pp., offset,* 35c.

Third set of estimates of the future population of the United States prepared for the National Resources Planning Board by the authors. Based on the 1940 census, they are a statement of the significance of the recent vital changes in terms of the probable future size and composition of the United States. Twelve series of estimates are presented, which are based on a series of assumptions with respect to the course of fertility, mortality, and immigration.

Estimates of the Civilian Population of the United States, by Counties: March 1, 1943.—*Department of Commerce, Bureau of the Census, Washington, D. C. October* 1943. 22 *pp., offset.*

Revised estimates of the civilian population for regions, divisions, states and metropolitan counties; estimates for all counties, by states. Includes statistics for March 1, 1943; April 1, 1940; and the estimated change between April 1, 1940, and March 1, 1943. Supersedes the preliminary estimates for states and metropolitan counties published in releases no. 36 and no. 37 of this series.

Ordinances Codified

The Ordinances of the City of Ames, Iowa.—Arranged under the Order and Direction of the City Council, Ames, Iowa. 1943. 326 *pp.*

Ames has joined the ranks of those cities which have codified their ordinances and has issued this volume of the city ordinances. They are classified under the following headings: jurisdiction, city council, commissions and boards, city officials, traffic and parking, building regulations, licensed businesses, public utilities, street and public improvements, utility installations, general misdemeanors, public health, and miscellaneous.

Wartime Developments in American Government

Current American Government — Wartime Developments.—By L. Vaughan Howard and Hugh A. Bone. D. Appleton-Century Company, New York City. 1943. 357 *pp.* $2.75.

The purpose of this book, intended primarily for students of government, is to describe the principal developments which the war has brought about in the American system of government. Deals with such topics as: from diplomacy to war, the presidency, administrative organization, the federal service, congress in wartime, political parties and pressure groups, civil liberties and war information, alien enemies and alien property, wartime finance, industrial mobilization and control, the problem of labor, military policy and organization, federal-state-local relations and post-war planning.

Northwest Regional Council

The Northwest Regional Council—A Two-Year Report Submitted to the Board of Trustees, the Members of the Council, and the Rockefeller Foundation.—511 Corbett Building, Portland, Oregon. 1943. 48 *pp.*

Discussion of the practical measures employed during the period 1941-1943 by the Northwest Regional Council, to make the results of research concerning the Pacific Northwest available at all reading levels; to foster the use of this information by students, educators, and the general public; to facilitate cooperation between educators and the various public and private agencies in the region, and to develop an informed public opinion. Shows what the Council has done to promote specific pieces of research and to activate a coordinated research program.

Department Report Forms

Monthly Administrative Reports for Cities. —The International City Managers' Association, 1313 East 60th St., Chicago, Ill. 1943. 32 *pp., mimeo,* $1.00.

The purpose of this manual is to suggest monthly report forms for use by city department heads in reporting to the chief administrator. These forms—covering personnel, finance, planning, law, police, fire, public works, health, housing, recreation, library, water, and electricity—are designed to measure performance as compared with the program for the year and with work accomplished in previous periods and the year to date.

Coordinated Planning

Coordinated Planning vs. Unemployment.—By Fred S. Childs. Reprint from New Jersey Engineer, October 1943. 4 *pp.*

Urges coordinated planning of business and government to solve post-war employment problems with government leadership by the establishment of a separate agency of the federal government to study, coordinate, recommend and approve all types of planning covering public works, relief and other similar activities; and to devise a pattern of objections for all state and city planning commissions to follow.

As our armed forces advance island after island in the South Pacific, on each of these stepping stones to Tokio they encounter an enemy more dangerous than the treacherous Japs.

It is water-borne disease. In past wars this killer has caused more casualties than the most deadly weapons devised by man!

Today, chlorine and its compounds help to protect our fighting men against many forms of this menace. And for this important purpose, and other vital uses, Penn Salt supplies the army and navy with this important chemical.

In camps, during troop transportation, and in the field, chlorine sanitizes water for drinking and bathing. Its compounds serve bactericidal uses in field and base hospitals—in laundries, for bleaching and sanitizing purposes—in footbaths as a safeguard against common fungus infections.

These needs take a great deal of the Penn Salt output of chlorine and chlorine compounds. However, our concentration on this urgent wartime service has provided us with a fund of experience and increased facilities which will be turned to serving our peacetime customers even more satisfactorily when the war is won.

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Financial Statistics of Cities

Two publications from the U. S. Department of Commerce, Bureau of the Census, Washington, D. C.

Financial Statistics of Cities 1941. *Volume 3: Statistical Compendium.*—1943. 160 *pp., offset.*

Detailed report of the finances of the 92 cities having populations over 100,000 on April 1, 1940, when the 16th census of population was taken. Presents data for each city on each major type of revenue and expenditure of general government, and on sinking and trust funds, debt, and public-service enterprises. In addition, includes summary tables of revenue, expenditure, and debt of overlying local governments (other than counties) to afford a basis of comparison with reports published in previous years when no data were given for city governments.

City Finance: 1942. *Volume 3 (Statistical Compendium) — Preliminary Summary. — August* 1943. 33 *pp., offset.*

This preliminary edition of the report of 1942 financial statistics of large cities presents summary tables of revenue, expenditure, debt, and public-service enterprises.

Federal Sources of Hydrologic Data

Principal Federal Sources of Hydrologic Data.—By the Special Advisory Committee on Hydrologic Data of the Water Resources Committee, National Resources Planning Board. May 1943. *U. S. Government Printing Office, Washington, D. C.* 76 *pp.* 20c.

First systematic attempt to catalogue the extensive hydrologic data which have been assembled, and which are of much value to those engaged in construction and operation of many types of public works, as well as those engaged in hydrologic or technical research in various fields. Report is substantially complete and includes either reference to the sources and availability of hydrologic data collected by federal agencies, or indicates the sources to which pertinent inquiry may be directed. Excellent reference aid to those concerned with the preparation of plans for post-war projects and programs for water control, land use, and watershed development.

Planning Bibliography

100 *References on Planning with Emphasis on City Planning.—By Katherine McNamara, Librarian of the Departments of Landscape Architecture and Regional Planning, Harvard University, Cambridge, Mass. October* 1943. 9 *pp., mimeo.*

Bibliography of planning material with emphasis on city planning; includes books, pamphlets, and government publications.

Municipal Salaries and Wages

An Analysis of Municipal Salaries and Wages.—By the City Planning Board, Concord, New Hampshire. October 1943. 34 *pp., mimeo.*

Statistical report of the salaries, wages, and personnel classification of municipal employment in the city of Concord, New Hampshire, and in other New England cities of comparable size, prepared for the use of the Concord Aldermanic Finance Committee.

Juvenile Delinquency

The Effects of the War on Children.—New York State Board of Social Welfare, 12 State St., Albany, New York. May 1943. 189 *pp.*

A compilation of testimony made by representatives of public and private agencies at eight public hearings on juvenile delinquency, held throughout New York State by the Special Committee on Juvenile Delinquency during December 1942 and January 1943. Deals with the factors giving rise to juvenile delinquency in general, and the specific factors due to the war; and recommends better community planning, better school, recreational and preventive facilities, and more part-time work—instead of full-time work—for mothers as some of the means of ameliorating the problem.

Government Retirement Systems

Retirement Systems for State and Local Government Employees: 1941.—*Prepared under the Supervision of E. R. Gray, Chief, Government Division, U. S. Department of Commerce, Bureau of the Census. October* 1943. 144 *pp., offset.*

Tables with explanatory text covering all public employee retirement systems administered by state and local governments. Analyzes the number population-size class, and area of retirement systems, protection to employees, financing methods, and type of protected employee. Includes tables reporting all retirement systems—by total systems, by type of systems, and by state area; tables on state, county, and municipal government systems; and an appendix of data on the method used in preparing this report.

Mosquito Control

Proceedings of the Thirtieth Annual Meeting of the New Jersey Mosquito Extermination Association—Held at Atlantic City, New Jersey, March 10-12, 1943.—*N. J. Mosquito Extermination Association, New Brunswick, N. J.* 1943. 241 *pp.*, $1.25.

A collection of addresses on the problem of controlling the malaria mosquito, the extermination work which is being done by mosquito workers in various parts of the United States and the world, and on the methods and materials being used by the armed forces in mosquito control. Photographs, charts, and graphs accompany the addresses.

Punch-Card Machines

Principles of Punch-Card Machine Operation—How to Operate Punch-Card Tabulating and Alphabetic Accounting Machines.—By Harry Pelle Hartkemeier, Professor of Business Statistics, University of Missouri. Thomas Y. Crowell Company, New York, N. Y. 1942. 279 *pp.* $3.25.

This manual, based on the use of International Business Machines' equipment, is designed to provide the beginning student with the text and illustrative matter necessary for a proper understanding of the punch-card method. Outlines the parts, operation, and use of numerical tabulating machines, and alphabetic accounting machines. Loose-leaf binding facilitates use of the manual as diagrams can be removed and compared.

Detroit Government

A Manual of the Government of Detroit.—By Dorothy Ketcham. Detroit Bureau of Governmental Research, Inc., 5135 Cass Ave., Detroit, Mich. December 1942. 76 *pp., mimeo.*

Study of Detroit city government, designed as an aid to high school pupils in their course in municipal government. Covers: history of the growth of the city and of the city government, organization of the city government, the city's finances, protection of persons and property, public health and welfare, education, public works, municipal enterprises, and the judiciary.

The Speed Problem

The Speed Problem—A Library Research.—The Eno Foundation for Highway Traffic Control, Inc., Saugatuck, Conn. November 1943. 71 *pp.*

Presentation of the basic principles involved in the problem of the regulation of speed at which motor vehicles can be safely operated over our highways.

Trade Union Booklist

A Trade Union Library 1943.—*Prepared by Hazel C. Benjamin, Librarian, Industrial Relations Section, Princeton University, Princeton, N. J. September* 1943. 42 *pp.* 40c.

Fourth, revised edition of the annotated bibliography of books, pamphlets, and periodical literature in the field of organized labor relations issued by the Section. Covers—history of the labor movement, trade union structure, policies, and programs, company personnel programs, and relations of government and labor.

Safer Street Lighting

Safe Streets at Night—in Wartime and Thereafter.—The Street and Highway Lighting Safety Bureau, 155 East 44th St., New York City. 1943. *Unpaged, offset.*

Articles from *Electric Light and Power, Illuminating Engineer,* THE AMERICAN CITY, *New Jersey Municipalities,* and *Forbes* point out the dependence of safety on visibility by citing the fact that night traffic accidents have increased markedly in coastal dimout areas; and emphasize the importance of planning for better highway and street lighting in the post-war period in order to diminish accidents and relieve traffic congestion.

Municipal Services Outside Corporate Limits

Providing Municipal Services Outside Corporate Limits. The Experience of Tennessee Cities.—By Gerald W. Shaw. Department of Political Science, University of Tennessee, Knoxville, Tenn. July 1943. 32+ *pp., mimeo.*

This report of a survey of 70 Tennessee cities, concerning the furnishing of municipal services to persons in areas beyond the corporate limits, shows that police protection to outside areas is furnished by 43 per cent of the cities; fire protection by 81 per cent; and water by over 79 per cent of those cities operating municipal water systems. The report discusses the reasons for, and the pros and cons of these practices and concludes: "In any case, it is advisable that cities extend their services to outside areas only after careful examination of the implications of this practice for urban living."

Ohio River Pollution Survey

Ohio River Pollution Survey—Final Report to the Ohio River Committee.—U. S. Public Health Service, Office of Stream Sanitation, Cincinnati, Ohio. 1942. *Three Volumes,* 793 *pp. with Supplements.*

This report presents information concerning sources of pollution of the watercourses of the Ohio River Basin, volume of flow of the streams during the period of the survey, and laboratory data on the waters. The main three volumes discuss and illustrate with numerous charts, graphs, and maps, the main Ohio River, minor tributaries, and the individual major tributaries; the six supplements consider various specific phases of the work: epidemiological and biological studies, acid mine drainage, organization and methods of laboratory studies, industrial waste, and collection of data on sources of pollution.

Nutrition Problems

The Nutrition Front.—Report of the New York State Joint Legislative Committee on Nutrition, Albany, New York. 1943. 286 *pp.*

The first part of this report, the letter of transmittal of the Committee, points out that: "We must recognize that nutrition is a proper and permanent concern of state and local governments. It lies with government, assisted by private agencies and supported by enlightened public opinion, to take the lead in bringing proper food within the reach of all of our people." The second part consists largely of reports of studies and investigations embracing some of the main nutritional problems that are of particular concern to New York State, which were prepared by various authorities for the Committee. Special emphasis on industrial nutrition.

War Public Works

War Public Works—Compiled by Minnie Wiener. United States Government Printing Office, Washington, D. C. August 1943. 171 *pp.* 25c.

A compilation of statutes, executive orders, regulations, and other documents relating to the construction, financing, operation, and maintenance of community facilities under the Lanham Act as amended up to July 15, 1943. Due to the great number of federal statutes of general application to the program under the Lanham Act, only the more important provisions are included.

THEY'RE FIGHTING FOR VICTORY

Littleford Black Top Construction and Maintenance Units are fighting all over the world for Victory. They are building runways, roads, highways, etc., to speed the day of peace. Pressure Distributors, "Tankar" Heaters, Road Brooms, and Supply Tanks are in all theatres of war.

After Victory these proven Littleford units will again speed up the construction and repair of our highway and airport systems. On the battlefront and at home, Littleford units give the most efficient results. Remember to purchase your post-war black top construction and maintenance equipment that bears the Littleford trademark.

Upper Left—Road Broom.
Lower Left—"Tankar" Heater.
Bottom—"Spray Master" Pressure Distributor.
Right—Bituminous Supply Tank.

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500 E. Pearl Street Cincinnati, Ohio

Bibliography of Data for Cities

A Guide to Published Data for Cities of the United States.—By Pressly S. Sikes, Indiana University, Department of Government. Bureau of Government Research, Indiana University, Bloomington, Indiana. 1943. 48 *pp.*

The purpose of this publication is to provide in a convenient form a guide to the compiled and published statistical data applying to all, or reasonably large selections of, cities of the United States. Omits data published by individual cities or groups of cities which are not national in scope. The coverage is sufficiently complete to assist one in locating statistical data on virtually any subject.

Index of State Legislation

State Law Index—An Index to the Legislation of the States of the United States. Enacted During the Biennium 1941-1942.—*Compiled by the State Law Index Section, Legislative Reference Section, Library of Congress. United States Government Printing Office, Washington, D. C.* 1943. *vii* + 765 *pp.* $1.75.

Ninth biennial index covering the permanent, general laws passed by state and territorial legislatures during 1941-1942, together with laws of the 1940 New Jersey adjourned session. Does not cover the local, temporary, or private acts and resolutions published in the printed volumes of "general laws" of the states except for: acts dealing with municipalities of a given class which actually include a considerable proportion of the municipalities in the particular state, temporary legislation of intrinsic importance resulting from the "depression," and temporary legislation relating to defense and the war emergency. The citations of laws consist of the state, the year, the date of approval by the governor, the page and the chapter; and an indication if administrative rule making power is granted.

Standard for Recreation Facilities

Standards for Neighborhood Recreation Areas and Facilities.—National Recreation Association, 315 Fourth Ave., New York City. October 1943. 16 *pp.*

Sound social planning demands that there be adequate recreation opportunities provided in the large scale housing and neighborhood redevelopment projects proposed for the post-war period.

This statement presents standards for outdoor recreation areas and indoor recreation facilities, indicates the authorities concerned with the provision of such areas and facilities, and suggests the importance of cooperation in providing them in new and rehabilitated neighborhoods.

San Francisco Shoreline Development

Shoreline Development—A Portion of the Master Plan of San Francisco (Preliminary Report).—San Francisco City Planning Commission, San Francisco, Calif. September 1943. 132 *pp., offset.*

The purpose of this study, which represents an initial stage in the development of a Master Plan for San Francisco by the City Planning Commiisson, is mainly to lay the foundation for a widely beneficial program of waterfront development. It points out, with the help of graphs and diagrams, the existing conditions and the general nature of the waterfront problem; outlines a coordinated series of projects to be undertaken along the entire waterfront; and gives suggestions for immediate and post-war action to make these plans effective.

The Civic Federation

Fifty Years on the Civic Front.—By Douglas Sutherland. The Civic Federation, Chicago, Ill. 1943. 98 *pp.*

History of the Civic Federation's activities, from its inception in 1893 to the present, in its efforts to collect, compile, and present data concerning the cost of local government for the information and advice of public officials, citizens, and property owners.

Police and Fire Department Personnel

Present Position of Police and Fire Departments in Relation to the Selective Training and Service Act.—By the United States Conference of Mayors, 730 Jackson Place, N. W., Washington, D. C. October 1943. 10 *pp., mimeo.*

This report points out that on the basis of a survey just concluded by the United States Conference on Mayors, 100 major American cities with a total population in excess of 16,000,000 face the possibility of losing over one-third of the uniformed personnel of their police and fire departments through operation of the Selective Training and Service Act.

Effect of the War on Specified Areas

Three publications from the U. S. Department of Labor, Bureau of Labor Statistics, Washington, D. C.

Impact of the War on the Detroit Area.—July 1943. 72 *pp., mimeo.*

This study is one of a series of industrial reports prepared by the Bureau of Labor Statistics as a means of developing a panoramic background of local conditions against which proposed federal policies for the post-war period can be appraised. It analyzes Detroit's population, labor force, employment opportunities, and living conditions before the war; traces the changes which have taken place as a result of conversion of the automobile industry to the production of tanks, bombs, jeeps, etc.; and points out the industrial prospects for the post-war period.

Impact of the War on Mayes County, Oklahoma.—April 1943. 17 *pp., mimeo.*

Similar study of Mayes County, a farming area transformed by the war into an important manufacturing center by the location of the Oklahoma Ordinance Works in its midst.

Impact of the war on Windsor County, Vermont.—April 1943. 27 *pp., mimeo.*

Similar study of the Springfield machine tool area.

Chicago Subway

Chicago Subways.—Department of Subways and Superhighways, Chicago, Ill. October 1943. 31 *pp.*

The story in photographs of the construction of Chicago's first transportation subway, opened last month, which was a joint project of the city administration and the federal government.

Other Reports Received

BATH, MAINE.—"A Statistical Summary of the Bath Shipbuilding Area."—U. S. Department of Labor, Bureau of Labor Statistics, Washington, D. C. June 1943. 13 pp., mimeo.

CHATTANOOGA, TENN.—Auditor's Report, for fiscal year ended June 30, 1943. 133 pp.

CLARK COUNTY, NEVADA.—"Impact of the War on Clark County, Nevada."—U. S. Department of Labor, Bureau of Labor Statistics, Washington, D. C. July 1943. 22 pp., mimeo.

HUNTINGTON PARK, CALIF.—Annual Report, for the fiscal year July 1, 1942—June 30, 1943. 48 pp.

MARIN, CALIF.—"Fighters on the Home Front"—1st Annual Report of the Housing Authority, January 27, 1942-January 27, 1943. Unpaged.

MULTNOMAH COUNTY (PORTLAND), OREGON.—Budget Facts and Financial Statistics for 1943-1944. 84 pp.

OGLESBY, ILL.—Semi-Annual Report, May 1, 1, 1943 to October 31, 1943. 29 pp.

PASADENA, CALIF.—Annual Report of the City Controller, for the fiscal year ended June 30, 1943. 99 pp.

RIDGEFIELD, CONN.—Annual Report, for the year ending August 31, 1943. 76 pp.

APCO-V-APCO PRIMERS

AUTOMATIC POWER OR TANK PRIMERS

AIR RELEASE VALVES

FOR FILTER PIPE LINES DISTRIBUTION LINES AND OTHER USES

17 TYPES

VALVE AND PRIMER CORPORATION

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HYDRO-TITE

HYDRO-TITE — The self-caulking joint compound that makes cast iron water pipe joints — strong — tight — flexible and everlasting. Used on thousands of miles of pipe with a record of more than 30 years without a failure.

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FIBREX — The sanitary paper packing that is used like braided jute. Free from bacteria — treated with a water repellent —put up in 60 pound reels. 70 pounds of Fibrex takes the place of 100 pounds of braided jute.

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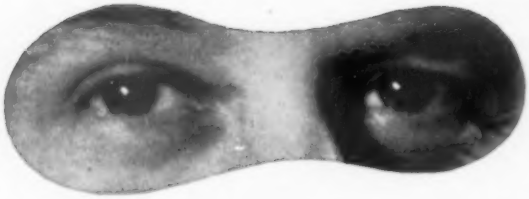
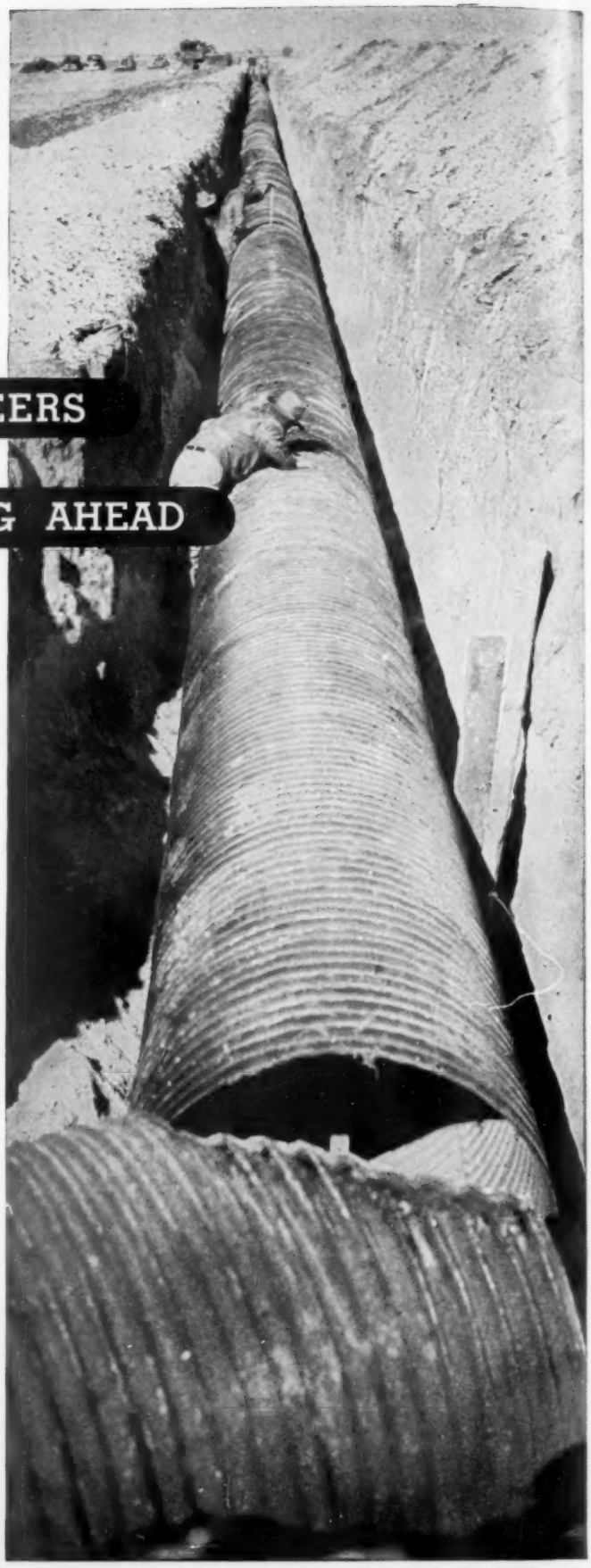
DRY BRAIDED Fibrex



FOR SEWER ENGINEERS

WHO ARE LOOKING AHEAD



Future-thinking engineers will be interested in this airport drainage story: Engineering integrity demanded a pipe with safe strength to handle heavy loads. Since the port was to continue in use after the war, economy dictated that the system be as durable as possible. Designers solved the problem with Asbestos-Bonded Paved Pipe.

The flexible corrugated metal design of ARMCO Pipe prevents breakage; and band couplers make for strong, tight joints. Longer lengths and fewer joints mean lower installation costs. Cradling is unnecessary. Corrosion is shackled by a full bituminous coating tightly bonded to the base metal. A thick bituminous pavement checks erosion—makes the bottom last as long as the top.

It will pay you well to keep Asbestos-Bonded ARMCO Sewer Pipe in mind for post-war projects even though you may not be able to get it for immediate construction. After the war it again will be available to help solve your toughest sewer problems. Armco Drainage Products Assn., Middletown, O.

★ ★ ★ ★

ASBESTOS-BONDED
ARMCO SEWER PIPE

News and Illustrations

Items of Interest to City, Town and County Officials and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A view of Yeoman's "Rim-Drive" Clarifier.

A Rim-Driven Sewage Clarifier

Savings of over 95 per cent in torque demand are claimed by the new Yeomans "Rim-Drive" Clarifier tank mechanism, introduced to the sanitation field at the Sewage Works convention in Chicago, October 21-23 by Yeomans Brothers Co., 1433 Dayton St., Chicago 22, Ill. The economy is accomplished by eliminating all elements of the drive from the center of the tank and locating the motor, the controls, and all parts of power transmission on the rim.

Power applied at the rim takes full advantage of the lever arm principle. Center drive mechanisms must move loads at both ends of the scraper assembly, while the "Rim-Drive" applies power at the periphery of the scraper assembly, reducing power requirements to a minimum. This, Yeomans engineers state, means reduced torque demand, lower maintenance cost, and less wear and tear.

For a 40-foot diameter primary clarifier with automatic skimmer using a center shaft, they recommend a gear reducer of 30,000 inch-pounds torque capacity—including allowance for safety factor. The Yeomans "Rim-Drive" design would require only 125 inch-pounds, a torque saving of over 95 per cent.

In addition to reduced torque-demand, the "Rim-Drive" has other cost-cutting features. Bridges and walkways are unnecessary, and thus eliminated. Costly reduction-gear assemblies are replaced with a simple inexpensive worm-gear assembly at the rim of the tank. Many other miscellaneous parts are eliminated because of the extreme simplicity of the "Rim-Drive" design.

Bulletin 6710 describes the "Rim-Drive" in greater detail and will be sent on request. It also presents for the first time the new Yeomans "Auto-Skimmer" and "Auto Flusher" for primary clarifier tanks. This improved scum collector is designed for maximum efficiency, yet employs few parts.

The "Auto-Skimmer" is equipped with a curved skimmer blade which concentrates the scum into a very restricted area near the periphery. A spring-loaded, steel, knife-edge, hinged scraper blade wipes the scum over a steel scum apron into a scum trough. No scum trough valve is needed as the "Auto-Scraper" opens automatically, before the scum is deposited in the scum trough, and continues to flow until the scraper blade has left the trough.

White Star to Mathieson "E"

In recognition of its continued contributions to war production, the Niagara Falls plant of the Mathieson Alkali Works, Inc., 60 E. 42nd St., New York, has been authorized to add a white star to its "E" flag.

The flag itself was presented to Mathieson last February. The white star, signifying that this efficiency has been continuously maintained during the succeeding six-month period, has just been awarded by the War Department.

U. S. Patent System Fundamentally Sound

The existing U. S. patent system is fundamentally sound and has helped rather than hindered the successful prosecution of the war. These are the two most important findings of the National Patent Planning Commission created by President Roosevelt on December 12, 1941 —according to J. D. Chesnut, Manager, Patent and New Development Department, Byron-Jackson Co., P. O. Box 2017, Terminal Annex, Los Angeles, Calif.

"There have been certain recommendations made by this Commission. We understand that legislation will shortly be introduced into Congress embodying these recommendations; and we expect, if and when this occurs, that there will be some lively discussions between the staunch supporters of our existing patent system and the supporters of the so-called 'patent reform legislation,' which has been embodied in certain previous congressional bills."

Among the cnanges suggested by the group is that a more definite yardstick be established as to what invention is. The Commission proposes that Congress declare a definite standard, whereby patentability will be determined by measuring the advancement of the arts and sciences, without regard to the mental or physical steps which led to the final solution of the problem.

Simplification of procedure is also suggested in the event that a patent is refused by the patent office and the inventor wishes to appeal. Present procedure places the appeal in either of two courts, which the authors feel is confusing and unnecessary.

The life of a patent shall be limited to twenty years from the filing date, instead of seventeen years from the issue date—thus discouraging the practice of prolonging the useful life of a patent by dilatory prosecution of the patent application.

License agreements must be recorded in the U. S. Patent Office where they will be available for inspection by the U. S. Dept. of Justice.

The Commission is composed of:

Charles F. Kettering, Vice-President in charge of research, General Motors Corporation.

Owen D. Young, Chairman of the Board, General Electric Corporation.

Edward McGrady, former Assistant Secretary of Labor, now Vice-President of the Radio Corporation of America.

Francis P. Gaines, President of Washington and Lee University, Virginia.

Dr. A. A. Potter, Dean of Engineering, Purdue University.

Conway P. Coe, U. S. Commissioner of Patents.

Chester C. Davis, President, Federal Reserve Bank of St. Louis and Agricultural authority.

Air-Borne Tractor Shovels

Hough air-borne tractor shovels are proving so valuable to the war effort on beaches and fighting fronts, that in order to meet increased government orders, it has been necessary to triple the size of the buildings and production facilities of the Frank C. Hough Co.'s no. 1 plant at Libertyville, Ill. C. E. Killibrew, Sales Manager, announced recently. The airborne shovel is small, rugged, and compact and can be easily stowed away on a transport plane from which it emerges ready for work. Such shovels are used for road construction, building gun emplacements, tank traps, and excavating for camp sites, and many smaller uses.

Another wartime application of Hough equipment is the use of tractor powered brooms of various sizes in maintaining airports and land strips, Mr. Killibrew points out.

Army men unloading a Hough air-borne tractor shovel from a glider.

Roots-Sand-Gravel-! COMING UP!

In more than 5000 American cities FLEXIBLE sewer cleaning equipment has modernized and simplified the essential job of keeping the Nation's sewers free of obstructions. Thus FLEXIBLE renders a triple wartime service:

1—Cleans sewers to guard the Nation's health.

2—Conserves materials by deferring new installations.

3—Releases man power for other essential war work.

FLEXIBLE equipment is manufactured in America's largest plant devoted exclusively to this purpose. Here, also, new processes are now being developed that will still further serve American municipalities after Victory is won.

FLEXIBLE SEWER ROD EQUIPMENT CO.
9059 VENICE BLVD.
LOS ANGELES 34, CALIF.
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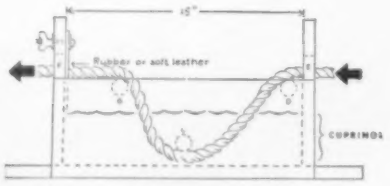
To better Preserve your Rope Treat it yourself with . . . . . CUPRINOL

Instead of wasteful dipping, make a unit like this and run your rope through Cuprinol.



We will send you scale plans and working information. Just write for "Cuprinol Rope Treating Unit Diagrams". The unit holds a gallon, and a gallon of Cuprinol treats about 25 lbs. of rope. Preserves it from rot, marine growth and insects. Use "Cuprinol for Fabrics" to lengthen the life and service of the rope that is so valuable today.

Send request for Working Diagram to

CUPRINOL, Inc., 26 Spring Lane, Boston 9, Mass.

WANTED: TRAINED ADMINISTRATORS

☆ Cities all over the country are losing some of their top administrators to the federal and state governments and to defense industries. Unless there are trained replacements for these key men, city governments will be seriously crippled. If you are a department head, you owe it to your city to train an "understudy" for your job. If you are a junior administrator, now is the time to prepare for advancement.

Enroll now in one of these nine practical correspondence courses:

- Technique of Municipal Administration
- Municipal Finance Administration
- Municipal Police Administration
- Municipal Recreation Administration
- Local Welfare Administration
- Municipal Personnel Administration
- Municipal Public Works Administration
- Municipal Fire Administration
- Local Planning Administration

☆ Special texts have been prepared for administrators on the job. Lesson papers are reviewed by leading authorities in each field. The $35 fee for each course covers the text, individualized lesson instruction, and a certificate upon satisfactory completion of the work. The text alone sells for $7.50 a copy—$60 for a complete set. For use in group training projects, in lots of five or more, the price is $6 a copy.

There are now nearly 800 public officials enrolled in these courses in nearly 300 cities in 44 states.

WRITE FOR A SPECIAL CIRCULAR TODAY

THE INTERNATIONAL CITY MANAGERS' ASSOCIATION

1313 EAST 60TH STREET CHICAGO

Showing officials at the ceremonies for the awarding of the OCD National Security Award to Caterpillar.

OCD National Security Award to Caterpillar Tractor

The Office of Civilian Defense National Security Award, symbolizing preparedness by manufacturers on the home front, was awarded employees of Caterpillar Tractor Co., Peoria, Ill., on October 7 in a suitable outdoor ceremony.

The award, one of the first four in the country to be awarded by the OCD, was presented by E. J. Condon, Chicago Director of the Sixth Civilian Defense Region who said, "Good factory facilities today are more precious than jewels and this award is a tribute to the magnificent record "Caterpillar" has achieved by utilizing facilities to the best advantage. The OCD hopes by awarding this symbol of foresight, cooperation and patriotism, to encourage other plants to go forth and do likewise."

The 70-acre plant is divided into six zones and subdivided into 18 sections. Zone and sectional leaders, on duty for every shift, are supervisors in normal plant operations.

American Locomotive Gets New Director

Robert M. McColl, Vice-President, Manufacturing, American Locomotive Co., 30 Church St., New York, N. Y., was recently elected a director of the company at a meeting of the Board of Directors.

Mr. McColl has been associated with the company since 1922—first he was attached to the New York office and in 1925 was made Manager of the Schenectady plant. In 1931 he was elected President and Director of the McIntosh & Seymour Corp., Auburn, N. Y., a division of the American Locomotive Co., and when they merged was appointed Vice-President of the American Locomotive Co., Diesel Engine Division. In 1936 he was made President of the Alco Products, Inc., another Division of the American Locomotive Company, and on their merger was appointed Vice-President of the American Locomotive Co., Alco Products Division. Since 1940 he has been Vice-President, Manufacturing.

Art Rerick Dies, Etnyre Vice-President

Arthur C. Rerick, Vice-President of E. D. Etnyre & Co., Oregon, Ill., died at his home in South Bend, Ill., on September 30 after a short illness.

For over a period of ten years he had served as special representative with dealers, owners, and operators of Etnyre equipment. About two years ago he was elected Vice-President of the company.

At the time of his death he was on leave of absence from the company, serving as a member of the Highway Machinery Division of the War Production Board in an endeavor to help the war effort.

"Colonel" Art Rerick

Previous to his association with Etnyre he was affiliated with the Rumeley Co. of La Porte, Ind.; and later with the Municipal Supply Co. at South Bend, Ind.

Save Water . . . Save Steam

Tune in on the Nation's Water Conservation Campaign with a

GLOBE GEOPHONE

Detect underground leaks with this sensitive instrument which operates on the principle of the seismograph used for recording earth tremors.

Write today for the GEOPHONE circular.

GLOBE PHONE MFG. CORP.

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Save Water . . . Save Steam

Fire Stream Data at your Finger Tips

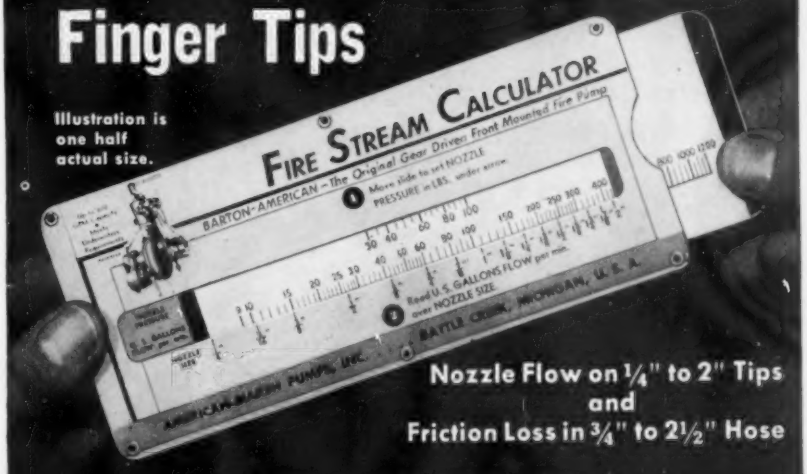

FIRE STREAM CALCULATOR
BARTON-AMERICAN – The Original Gear Driven Front Mounted Fire Pump
BATTLE CREEK, MICHIGAN, U. S. A.
AMERICAN-MARSH PUMPS, INC.

Illustration is one half actual size.

Nozzle Flow on 1/4" to 2" Tips and Friction Loss in 3/4" to 2 1/2" Hose

Obtain your calculator from the BARTON-AMERICAN representative in your territory

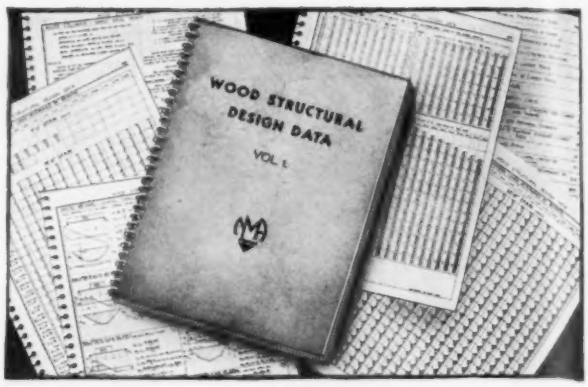
AMERICAN-MARSH PUMPS, INC.

Battle Creek, Michigan, U.S.A.

SERVICES TECO HAS FOR YOU

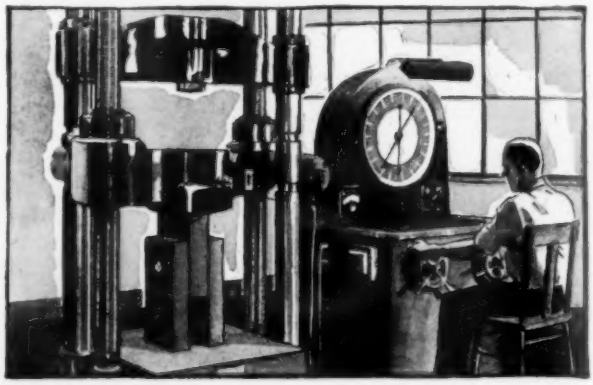
WHEN YOU BUILD WITH WOOD

CONSULTING SERVICE. Teco maintains a staff of engineers to consult with architects and engineers on their design problems. Teco Connector distributors and fabricators in all parts of the country also render helpful services.



DESIGN DATA SERVICE. Teco has available for architects and engineers complete data on all phases of timber design, including tables and charts on timber beams, columns, floors, connector loads, bolt loads, stresses, etc.

TYPICAL DESIGN SERVICE. "Typical Designs of Timber Structures"—a 100-page book—is available to architects and engineers free upon request. Copies of several hundred other designs of typical Teco Timber Structures are also available on request.



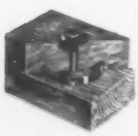
RESEARCH SERVICE. Teco conducts a continuous research program through laboratories as well as sponsoring research at outstanding engineering colleges to increase the design knowledge of timber designers.

Wood is often referred to as the *rediscovered* material, due to its development by science for plastics, laminations and heavy construction.

Engineering science that developed the Teco Connector System of timber construction is responsible for the position timber occupies as a leading heavy construction material.

The Teco timber system serves our war effort . . . it will *serve you* in peace times too.

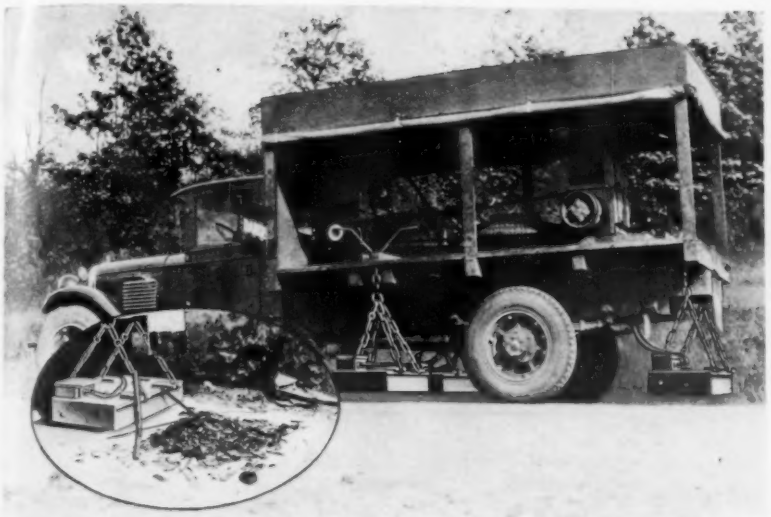
TIMBER ENGINEERING COMPANY
—Washington—Chicago—
Minneapolis—Portland.



The **TECO** *Ring Connector spreads the load on a timber joint over practically the entire cross-section of the wood . . . brings the full structural strength of lumber into play.*

Specify
TECO
CONNECTORS
★ TOOLS ★

ENDORSED BY LEADING LUMBER MANUFACTURERS AND FABRICATORS



How Cutler-Hammer's new metal picking magnet works. The insert shows scrap metal that it has collected on a typical trip.

Street Cleaning Magnet

Nails, wire, tacks, springs, and other bits of metal destined to play havoc with an auto, truck, or aeroplane tire, need no longer be a problem on vital roads, streets, airports, or parking areas.

Cutler-Hammer, Inc., Milwaukee 1, Wis., has developed a road-cleaning magnet that will give street officials a real weapon in combatting this problem.

The unit consists of three magnets mounted on a truck arranged so that they can span a distance of 8 to 9 feet. These magnets are located from 2 to 3 inches above the ground, thereby drawing subsurface metallic material from the earth in case of dirt roads.

An ordinary farm generator mounted on the truck is sufficient to supply the necessary power.

New Members for Asphalt Institute

Ten additional asphalt producing companies have been elected by the Board of Directors of The Asphalt Institute, 801 Second Ave., New York 17, N. Y., bringing the total number of companies constituting its membership to 37. Following is a list of the new members:

Bell Oil & Refining Co., Los Angeles, Calif.

Exeter Refining Co., Long Beach, Calif.

O. C. Field Gasoline Corp., Los Angeles, Calif.

Five C. Refining Co., Los Angeles, Calif.

Gilmore Oil Co., Los Angeles, Calif.

Golden Bear Oil Co., Los Angeles, Calif.

Inland Empire Refineries, Inc., Spokane, Wash.

Kanotex Refining Co., Arkansas City, Kan.

The Petrol Corp., Los Angeles, Calif.

Wasatch Oil Refining Co., Salt Lake City, Utah.

"This increase in membership is significant," states Herbert Spencer, President, "pointing as it does to the important part the Institute must play in post-war developments,—both in its engineering and research fields."

To cover the southern California territory more intensively, an Institute office has been established in Los Angeles. The address is 403 Pacific Mutual Building, 523 West Sixth St., Los Angeles 14, Calif., and Arthur H. Benedict has been appointed Engineer-in-Charge.

Improved Charts for Temperature Records

Those municipal water, sewage, electric plants, and incinerators using multiple-point Micromax recorders for making permanent records of varying temperatures will realize the value of the new split charts that Leeds and Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa., has developed.

These charts are divided into two or three vertical sections, depending on the range of temperature that the operator anticipates. They keep similar operating temperature records separated yet parallel, which are ideal for comparison, as the manufacturer points out.

In addition, the recorders can be equipped with a daily tear-off device which makes it possible to tear off easy-to-file lengths of the chart.

All are fully described in a new 6-page folder N-163 (2), "New Ease in Handling Multiple-Point Charts," recently published by Leeds and Northrup.

Army-Navy "E" to Trackson

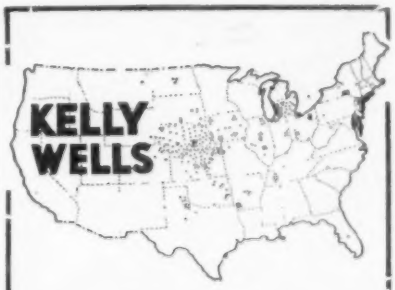
On August 31, 1943, the employees of the Trackson Co., Milwaukee, Wis., were presented with the Army-Navy "E" award for their outstanding effort in the production of ordnance materiel and tractor equipment for the Armed Forces. The brief but colorful ceremony was held at the main plant.

Municipalities which have Morris Storm Water and Drainage Pumps need not fear sudden heavy storms, even if severe. These highly efficient, dependable units are protecting scores of municipalities in many sections of the country, and can be furnished for any operating conditions or methods of control.

Bulletin on request

MORRIS MACHINE WORKS
BALDWINSVILLE, N. Y.

MORRIS
CENTRIFUGAL PUMPS
for municipal services



ALL OVER THE MAP!

For 25 years Kelly concrete cased wells have stood the test of time. We have several thousand now in service, covering a territory of 33 states and parts of Canada.

Kelly concrete cased wells are especially adapted for developing large water supplies from sand and gravel formations.

We Guarantee our wells to develop all available water, sand free, to their full capacity.

KELLY WELL CO., INC.
Grand Island, Neb.

160 Million Gallons Daily

Thomas Jefferson Pumping Station
uses four Fairbanks-Morse thirty-inch, double-suction pumps

A group of four Fairbanks-Morse thirty-inch, double-suction, single-stage, split-case pumps gives the Thomas Jefferson Pumping Station in Chicago a total capacity of 160,000,000 gallons of water daily. Installation of these pumps departs from the conventional in that suction is horizontal and discharge is vertical. Water is taken from Lake Michigan at the Wilson Avenue Crib, brought through five miles of tunnel and discharged through twenty-three miles of feeder mains. Each of these big pumps is driven by a 1200 hp. motor.

Modern pumping equipment such as is found at the Thomas Jefferson Pumping Station, saves the taxpayers of any municipality real money. In many cases, old pumps, even if as good as when installed, exact at least a 10% power cost penalty. At that rate, new pumps soon pay for themselves.

Comparatively few cities require pumps with such large capacity as Chicago; but large or small, Fairbanks-Morse builds the right pump for the job.

Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago, Illinois.

BUY WAR BONDS

FAIRBANKS-MORSE

DIESEL ENGINES · WATER SYSTEMS
PUMPS · SCALES
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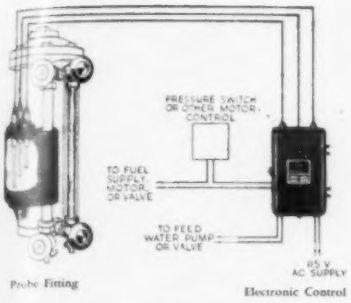
RAILROAD EQUIPMENT

Pumps


PRESSURE SWITCH OR OTHER MOTOR CONTROL
TO FUEL SUPPLY MOTOR OR VALVE
TO FEED WATER PUMP OR VALVE
115 V AC SUPPLY
Probe Fitting
Electronic Control

Typical FIREYE Installation For Automatic Boiler Feedwater Control And Low-Level Safeguard

Electronic Control for Regulating Feedwater

The Combustion Control Corp., 77 Broadway, Cambridge 42, Mass., has announced the FIREYE Electronic Feedwater Controls Series P156N for maintaining constant boilerwater levels automatically and guarding against low-water hazards. This equipment eliminates difficulties encountered with complicated mechanical devices and is guaranteed for an unlimited service—free life.

The automatic feedwater pump control and low-water protection is effected by using FIREYE Type P156N with Probe Fitting Type H53. The probe fitting may be mounted parallel to the water column or directly on the boiler.

Type H53 has three probes which marks on and off levels and a low-water danger point. When the water goes below the middle probe, FIREYE closes the electrical circuit controlling the pump and water feeds into the boiler. When it rises to the top probe, the water acts as conductor of a minute electrical current which operates the electronic control and turns off the pump. The lowest probe defines the danger point below which boiler water must not fall. Should water drop below this safety probe the control equipment immediately shuts off the fuel and sounds an alarm.

Personnel Changes for Gardner-Denver

The Gardner-Denver Co., Quincy, Ill., announces the appointment of R. H. Rodolf as Manager of the Pump and Compressor Division to succeed the late R. J. MacFarland.

Mr. Rodolf has been associated with the company since 1917 when he joined the Canadian Rock Drill Co., Vancouver, B. C., a subsidiary of the Denver Rock Drill Mfg. Co., of Denver, Colo., which later merged with the Gardner Governor Co. to form the present organization. He was transferred to Quincy in 1939 as Assistant Manager of the Portable Compressor and Rock Drill Division.

C. M. George has been appointed Assistant Manager of the Pump and Compressor Division to assist Mr. Rodolf.

Save TIME—Save MANPOWER—

USE

STEWART

Sewer Cleaning Equipment

Regular Bucket Sizes 4" to 36"

Root Cutters, Sectional Steel Rods, End Tools, Propelling Nozzles.

No. 11 Screw

Root Cutter Sizes 4" to 22"

Also a complete line of—

- Steel Tapes
- Round Steel Rods
- Self-propelling Nozzles
- Flushers
- Wire Brushes

Also

- Windlasses, hand or power driven, may be purchased separately

No. 1 Sewer and Conduit Rod

Regardless of your sewer-cleaning problem, write us today, without obligation. Complete catalog sent promptly on request.

W. H. STEWART, 1051 S. CLINTON ST., SYRACUSE, NEW YORK

★ ★

TO USE LESS FIBRE . . . USE FRESH FIBRE

AFRICAN BASS FIBRES

INDIA PALMYRAH STALKS

The longer mileage you obtain from fresh broom fibres means less time-taking refilling of the broom core and valuable man-hours put to an extra use. The use of fresh, high-quality fibres in your mechanical sweeper is sound economy these days.

We are able to service every need in all types and sizes. We would be happy to receive your request for samples and quotations.

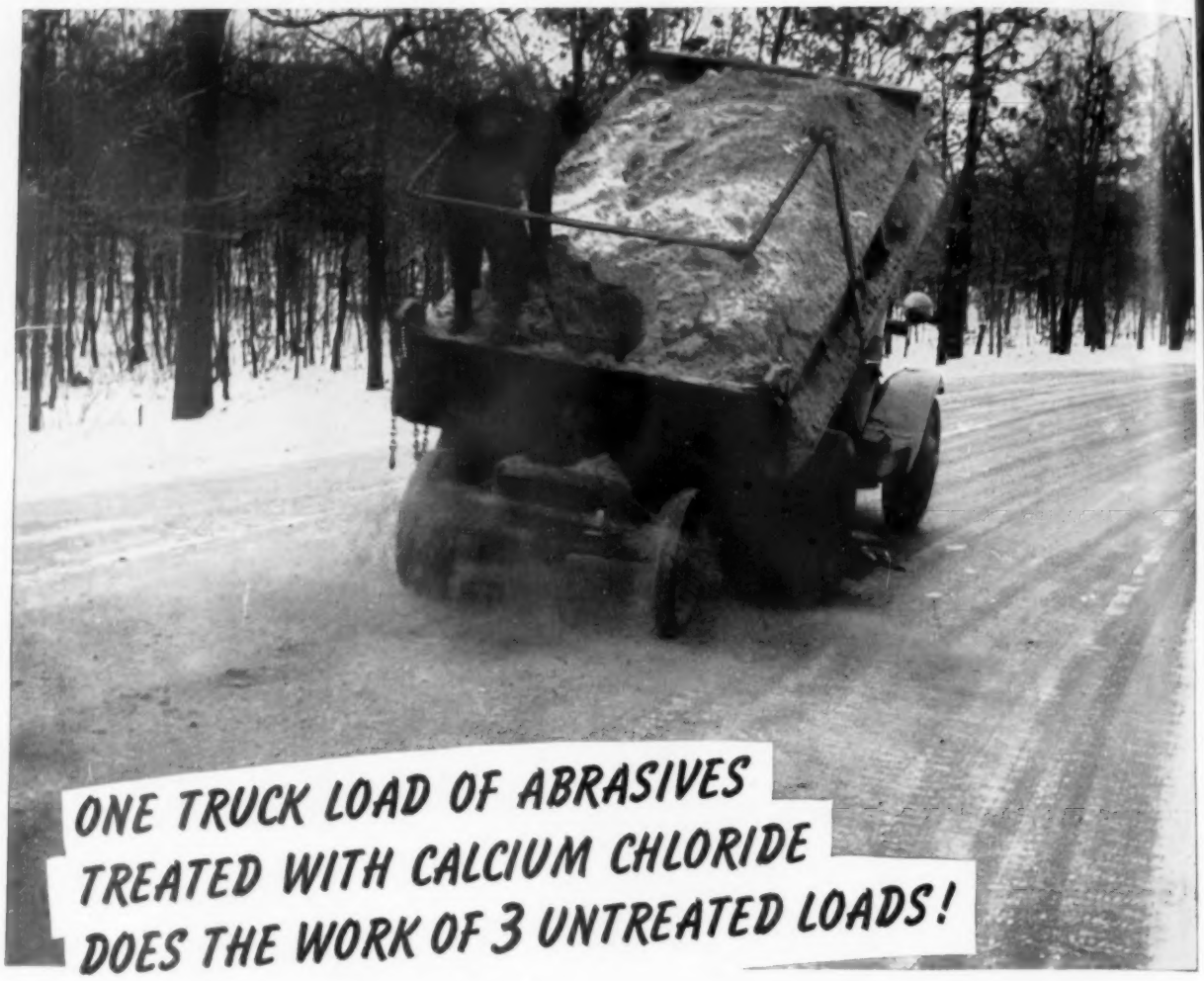
MOUNTAIN HICKORY SPLINTS

STEEL WIRE

SWEEPER STALKS

The OTTO GERDAU CO.

533 Canal St., New York 13, N. Y.



Trucks are scarce these days. Don't use three when one can do the work. You can save two-thirds of war-scant supplies of gas and tires.

Manpower is scarce these days. Road crews are depleted by military service and by the lure of high industrial wages. One crew can accomplish the same amount of skidproofing as three, if the abrasives used are treated with calcium chloride.

Automobile skid tests made under impartial supervision show that ½ lb. of abrasives treated with calcium chloride is as effective as 1½ lb. of untreated abrasives. Even in zero weather, the treated abrasives melt into ice quickly. They stay anchored in the ice . . . provide a sandpaper-like surface that gears the tires to the road.

Save trucks, tires, gasoline, manpower. Save two-thirds the cost of getting out your abrasives. Protect and hasten important war traffic by treating ice control abrasives with calcium chloride. Write for bulletin No. 27, "Skidproofing Icy Roads and Streets."

CALCIUM CHLORIDE ASSOCIATION, 4145 Penobscot Bldg., Detroit 26, Mich.

CALCIUM CHLORIDE

FAST • POSITIVE • ECONOMICAL

Gears Tires to the Road

A view of the new plant and supply facilities acquired by Link-Belt.

Link-Belt Gets New Plant

New plant and supply facilities became available to the Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill., through the recent purchase of the manufacturing plant and inventory of the Link Belt Supply Company in Minneapolis—announced by W. C. Carter, Link-Belt President.

According to Mr. Carter, the entire Minneapolis organization will be retained, present manufacturing facilities will be improved, and stocks expanded as rapidly as possible.

Ray S. Wood has been appointed Plant Manager.

Maintenance Rules for Diesel Engines

Here are some diesel engine maintenance rules compiled by Roy A. Hundley, Chief Engineer, Enterprise Engine and Foundry Co., 600 Florida St., San Francisco, Calif., veteran manufacturers of stationary diesel engines.

First—Emphasize cleanliness. To a large degree the appearance of the engine and the engine room indicates the appreciation and care that the machinery has received. Have a place for all tools and equipment. See that they are clean and in good working order. Keep all service lines tight and free of leaks, and all exposed metal surfaces painted or polished.

Second—Keep all gages and thermometers in good working order. Replace them when broken or worn out. Calibrate them occasionally to insure their accuracy. If the engine is equipped with themocouples and pyrometer, clean the thermocouple tips of carbon at regular intervals.

Third—Religiously follow a tabulated maintenance routine. This requires a certain amount of paper work which many operators dislike. However, they will find that it pays handsome dividends.

In regard to routine maintenance, Mr. Hundley makes the following suggestions that should be coordinated with specific manufacturers instructions.

Hourly—Feel all parts of the engine to detect any excessive temperatures, particularly on the cylinder head and side covers. Observe and record the lubricating oil level in the service tank, watching for a sudden gain or loss. Note and record the readings on all instruments. Turn the handles of cleanable type lubricating and fuel oil filters, if such are installed in their respective systems.

Daily (Every 24 hours)—Open the drain plugs of fuel and lube oil filters and tanks to drain out any water or sludge which may have accumulated. Bleed the fuel, lube oil, and water systems of air.

Weekly (Every 60 hours)—Check all external linkages, particularly governor and fuel linkages, for freeness of operation. Lubricate all of these moving parts.

Monthly (Every 250 hours)—Remove inspection covers and check crankcase sump. Remove oil from sump and observe for conditions and presence of water or sludge. If any is present, determine the cause. Check cam shaft and valve gear. Observe freeness of operation and wear, if any.

Every Six Months (Every 1,500 hours)—Flush the cooling system to remove any scale that may have accumulated. Observe the condition, and if bad, increase the frequency of the period of flushing. Clean the heat exchangers and lubricating oil coolers. Inspect gear case and observe the back-lash of gears and radial and thrust clearance of timing gears.

Annually (Every 3,000 hours)—Inspect the entire engine thoroughly, pulling at least one piston and cylinder head. Replace all worn parts, clean all parts thoroughly, and reassemble in accordance with the manufacturers recommendations. Check the packing glands of all pumps.

Every Three Months (Every 750 Hours)—Inspect and thoroughly check fuel injection system. Clean nozzles if necessary. Check nozzle opening pressures. Disassemble for observation only if there is apparent trouble, and then only by skilled operators who are familiar with the nature of the design and construction of fuel injection equipment. This investigation should be in accordance with the recommendations of the fuel injection manufacturer.

Ringstyle
COUPLINGS
The first improvement in water meter couplings in fifty years.

RINGSTYLE Couplings connect direct to copper tubing or iron pipe, saving pipe joints and fittings. Made in straight and angle patterns. Let us send you a sample.

FORD METER BOX CO.,
WABASH, IND.

Jeffrey
FOR A COMPLETE LINE OF SEWAGE AND WATER-TREATMENT EQUIPMENT . .

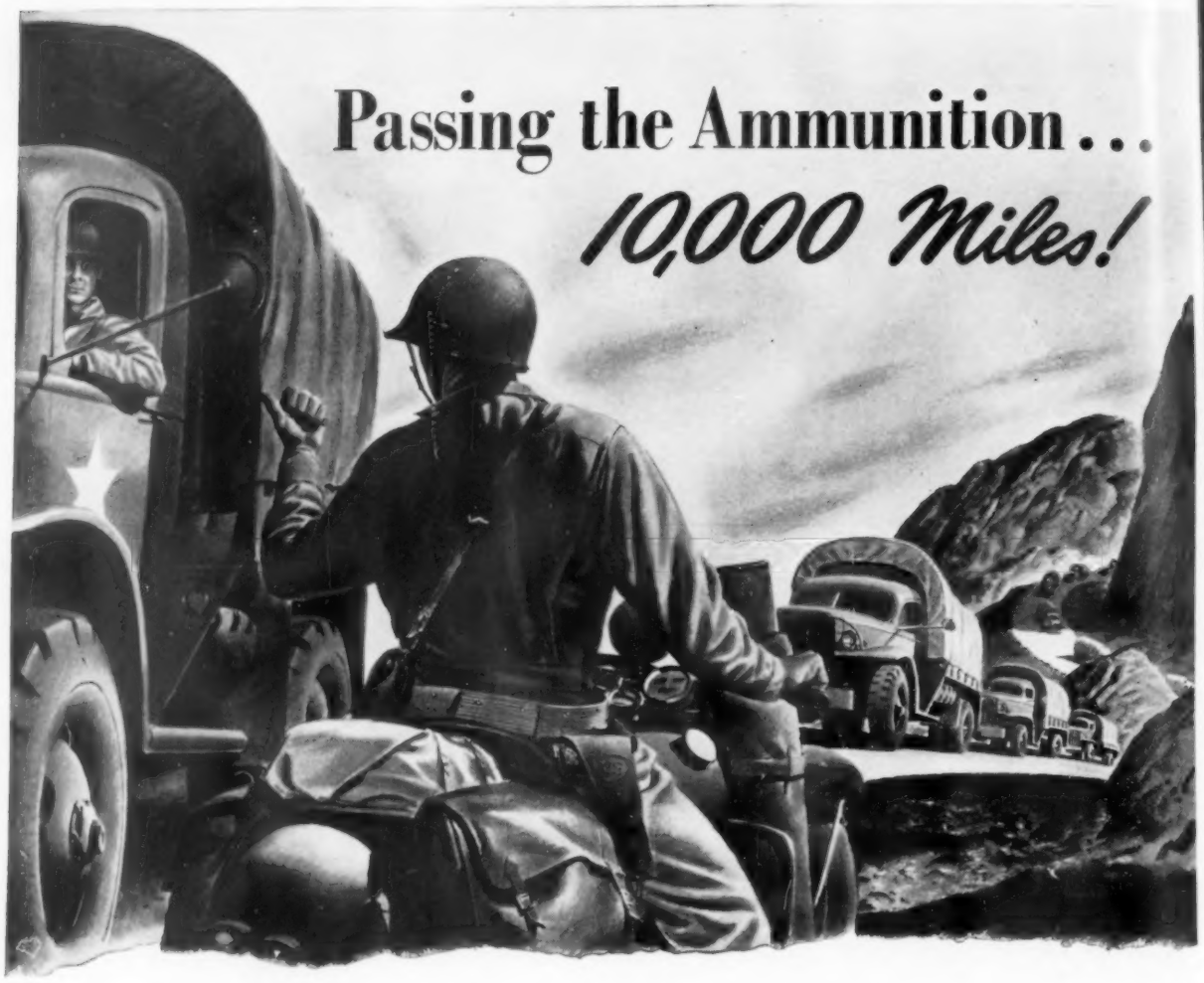
Bar screens (mechanically-cleaned)
Chemical feeders (electric vibrating)
Flocktrols (controlled flocculation)
Grit washers
Grit collectors
Primary and secondary sludge collectors
Sludge elevators
Screenings grinders
Scum removers
(All Patented)

Jeffrey engineers have had years of experience—have made many installations—can offer technical data on both equipment and plant design. Write

The Jeffrey Mfg. Co.
970-99 NORTH FOURTH STREET
COLUMBUS, OHIO

Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Harlan, Houston, Huntington, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, Scranton

Passing the Ammunition . . . *10,000 Miles!*



In this war of distance and movement, ammunition must be transported far and fast.

In a day's combat, a single anti-aircraft gun may use more than a ton of ammunition; an infantry division on a global fighting front may expend 300 tons of ammunition.

What kind of ammunition? How much ammunition? Where does it go? When must it get there? The answers to these questions must be written in figures.

Figures that flow through arsenals, war production plants, transportation and supply lines, and government offices.

Figures that must be accurate and obtained quickly, because guesswork and errors might have to be paid for with lives.

That thousands of the machines providing these figures are Burroughs machines is only logical, for Burroughs has long predominated wherever fast, accurate figuring is required.

Norden Bombsights

Years of experience in precision manufacturing enabled Burroughs to render an extremely important service to the nation by producing and delivering the famous Norden bombsight — one of the most important and precise instruments used in modern warfare.

New figuring and accounting machines are also produced by Burroughs for the Army, Navy, U. S. Government and other enterprises whose needs are approved by the War Production Board.

BURROUGHS ADDING MACHINE COMPANY, DETROIT, MICH.

★ BUY MORE WAR BONDS ★

Burroughs

FIGURING, ACCOUNTING AND STATISTICAL MACHINES • NATIONWIDE MAINTENANCE SERVICE • BUSINESS MACHINE SUPPLIES

New Adjustable Counterbore and Spotfacer

The Robert H. Clark Co., 3424 Sunset Blvd., Los Angeles 26, Calif., specialists in the manufacture of adjustable cutting tools, announce a new Adjustable Blade Counterbore and Spotfacer. The important feature of this new tool is that the blade is adjustable to any diameter within the broad limits of the tool. The eight sizes cover all fractional and decimal diameters from 9/16" to 5½" and provide interchangeable pilots from 3/16" to 5¼" in diameter, assuring a marked saving in tool inventory costs because each does the work of several fixed radius counterbores. The blades are also removable which makes it possible to resharpen or replace thm.

New Adjustable Blade Counterbore and Spotfacer.

The company points to an exclusive no-burr feature. The design of the interchangeable pilots prevents burrs from forming at the edge of the pilot hole, thereby avoiding "locked" pilots and resulting damage.

The TanTung blades are a tough non-ferrous cast alloy for metal cutting, developed to fill the gap between conventional high-speed steel and cemented carbides, and will successfully machine materials formerly considered non-machinable with steel tools. The blades are mounted at an angle designed to prevent chatter and to provide a clean true cut. They are braced against the body of the tool and securely held in position so that the tool will hold up under heavy cutting strain.

The tools may also be used to bore any diametr hole up to 5½" to any depth without using fixed-sized drills except for drilling the first pilot hole.

Wm. C. Perkins: Brick Paving Authority

William C. Perkins, well-known civil engineer and brick paving authority, died at his home on Wednesday, October 27, in Langhorne Manor, Pa. Mr. Perkins was the author of many technical articles on paving construction and lectured before various colleges on the same subject. He was Chief Engineer and Secretary of the Eastern Paving Brick Assn., from 1919 to the time of his death. He also was a member of the American Society of Civil Engineers, American Society of Testing Materials, American Public Works Association, and many other related organizations.

Pittsburgh Representative for Jenkins Valve

J. Murray Whitworth is now a Pittsburgh area sales representative of Jenkins Bros., 80 White St., New York, N. Y., manufacturers of valves—according to C. C. Chamberlain, General Sales Manager of the company. He succeeds John J. Simpson who resigned to become General Sales Manager of the Pittsburgh Gage & Supply Co.

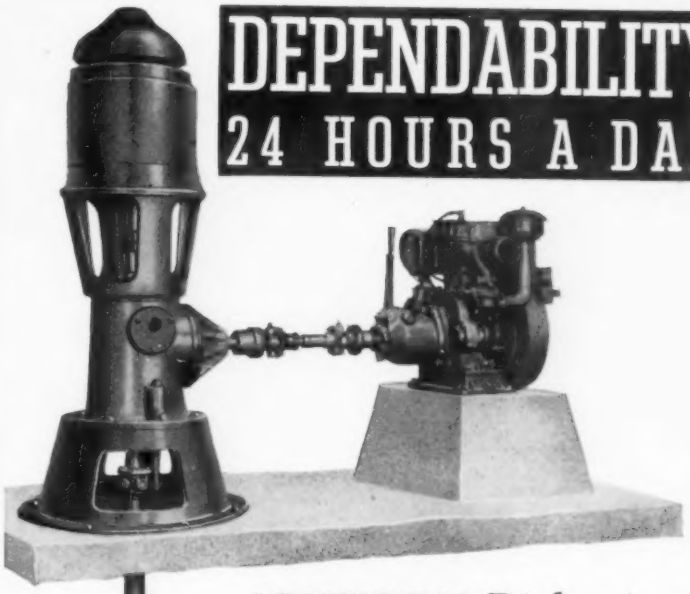
Mr. Whitworth has been connected with the company's Philadelphia branch for the past seven years. He will now be associated with L. V. McCune who has been Pittsburgh representative for over 30 years.

Cutler-Hammer Boston Manager

C. V. Topliffe is the new Manager of Cutler-Hammer's Boston district office—as recently announced by Cutler-Hammer, Inc., Milwaukee 1, Wis.

Mr. Topliffe succeeds W. E. Addicks, former District Manager of Boston and now the New York District Manager.

DEPENDABILITY
24 HOURS A DAY



JOHNSON *Right-Angle* PUMP DRIVE

★ SEWAGE ★ WATER WORKS ★
FIRE FIGHTING ★ FLOOD CONTROL

The Johnson Right-Angle Gear Drive is used as a "connecting unit" between the pump and the power unit. Illustration shows a combination application. These drives are manufactured in a variety of types and sizes, each designed to meet the specifications of a wide range of applications—Sewage Disposal; Water Supply; Fire Fighting; Flood Control; etc.

★ EFFICIENT ★ DEPENDABLE
★ ECONOMICAL ★ COMPACT
★ FULLY ENCLOSED ★ LONG LIFE

The Johnson Right-Angle Gear Drive is sold through Pump and Engine Manufacturers—their local representative will explain the many advantages of this drive which is used by scores of municipalities. Write for Catalog No. 12.

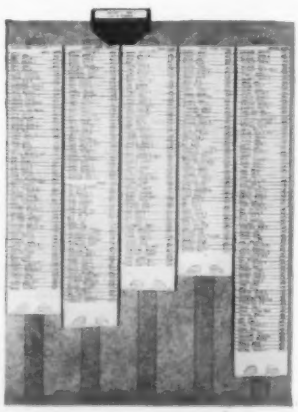
JOHNSON GEAR & MANUFACTURING CO., LTD.
MAIN OFFICE AND WORKS: BERKELEY, CALIFORNIA

Of course you say "It can't happen here!" But the point is that today there's a system of maintaining lists of voters in such a way that they're *always* ready for the public printer! This system does not require, before each election, the re-typing of voters' names from which poll lists can be printed. It puts an end forever to the slowness, high cost and cumbersomeness that characterize the usual old time methods.

Perfected by Remington Rand Systems Technicians to provide the safest, fastest and most economical technique of compiling voting lists, the *Index Visible* method is today saving time and money for numerous Counties and Municipalities. It does completely away with the recurring "bottle-neck" problem of preparing "Permanent Registration" voting lists.

As the pictures show, a small card is made out for each voter and filed on the Index Visible precinct panel. When an address is changed the card is simply removed from the file, the new card written and then filed in its proper location. New cards do not disturb the sequence of names already on the list. The list is at all times a *current* list and at election time it is only necessary to photolith the panels for reproduction.

Full details of this truly modern method of compiling and maintaining poll lists are available through the Remington Rand branch office nearest to you. Or write us at Systems Headquarters in Buffalo.

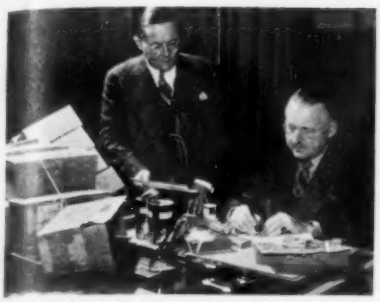


Inserting a new name on the ready-for-reproduction precinct panel is done instantly . . . at any time. Each Index Visible Flexo panel (*right*) holds 450 cards.

Voting lists are
ALWAYS UP TO DATE
with
Remington Rand
INDEX VISIBLE Equipment

REMINGTON RAND
BUFFALO 3, NEW YORK

Christmas Cheer



Col. Robert H. Morse, President of Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill., addresses gift packages to employees of the company now in the armed forces of the United States, as R. H. Morse, Jr., General Sales Mgr., assists him. Both are veterans of the last war and realize what it means to the man in uniform to be remembered at Christmas time.

Concrete Repair with Gunite

Any city with a substantial portion of its property built with concrete, will have an intense interest in concrete repair during these wartime days. Prominent among these repair methods is the application of sand and cement pneumatically by the method known more commonly as Gunite.

The Pressure Concrete Co., 6 Avenue B, Newark, N. J., is ready to prepare and submit for approval inspection reports, specifications, and proposals covering the repair of concrete stacks, walls, dams, and similar constructions; the lining of tunnels, sewers and reservoirs, steel and concrete tanks; as well as the construction of such modern developments as pre-stressed reinforced tanks and standpipes.

New Medart President

Ramy B. Deschner has been appointed President of the Fred Medart Mfg. Co., Potomac and De Kalb Sts., St. Louis 18, Mo., following the resignation of E. J. Medart. Mr. Deschner took office on October 1st.

The Fred Medart Mfg. Co. is well known for its line of steel lockers, shelving, gymnasium apparatus, gym seats, and playground apparatus.

Diesel Engine Power Costs

Every municipal official who has had to face the problem of city-owned power plants versus privately produced electricity, knows that the final decision rests on the comparative cost of generated kilowatt hours. To give some guidance in this matter, the Fairbanks, Morse and Co., 600 South Michigan Ave., Chicago 5, Ill., has tabulated these costs from a number of municipal electric plants. The results of this survey are shown below:

	Population	Generated* Cost/KWH	KWH Generated per Year	Fuel & Lube Oil Cost Per KWH	Installed HP In Plant
Augusta, Kans.	3,821	$.0078	2,554,460	$.0049	2,445
Barron, Wisc.	2,055	.0062	4,036,720	.0050	2,130
Bowie, Texas	3,464	.0087	2,155,300	.0050	1,490
Burlington, Kans.	2,356	.0067	1,664,700	.0034	975
Bushnell, Ill.	2,850	.0078	2,517,910	.0045	900
Canton, Mo.	2,150	.0074	2,486,600	.0044	2,170
Carmi, Ill.	4,000	.0086	2,462,288	.0045	2,030
Corning, Iowa	2,200	.0075	2,285,620	.0043	1,450
Delano, Minn.	1,094	.0099	1,609,200	.0059	1,080
Delta, Colo.	3,700	.0075	2,081,170	.0041	1,450
Fairview, Okla.	1,913	.0085	1,643,088	.0038	1,300
Georgetown, Tex.	3,690	.0068	2,061,500	.0041	1,470
Goshen, Ind.	10,397	.0084	9,122,700	.0053	4,100
Harrisonville, Mo.	2,327	.0076	2,096,500	.0039	1,020
Jacksonville, Ill.	17,747	.0066	6,226,760	.0044	4,975
La Junta, Colo.	7,000	.0068	5,384,600	.0043	4,725
Lewes, Del.	1,923	.0073	2,894,636	.0063	3,010
Madelia, Minn.	1,652	.0074	1,369,060	.0047	1,440
Mangum, Okla.	4,186	.0068	3,158,200	.0040	1,925
MountainLake,Minn.	1,745	.0085	1,195,900	.0051	940
Plaquemine, La.	5,140	.0093	2,243,600	.0051	1,860
Seaford, Del.	2,468	.0094	2,094,500	.0059	1,775
Sumner, Iowa	1,561	.0085	1,256,400	.0050	935
Terrell, Tex.	8,795	.0088	2,129,527	.0048	1,510
Trenton, Mo.	7,012	.0068	4,194,100	.0040	1,950
Villisca, Iowa	2,011	.0080	1,821,590	.0050	1,775
Totals			72,746,620		50,830
Averages		$.00765*		$.0047	

*Includes production costs such as fuel, lubricant, labor, maintenance and miscellaneous items.

The production cost of the combined output of the plants shown above is approximately 3/4 cents per kw-hr, with an average running plant capacity of 25 per cent.

Industrial BUILDINGS

by PITTSBURGH •DES MOINES

Planning new plant construction or additions? Pittsburgh-Des Moines' design, fabrication and erection will meet your most exacting requirements — with speed and craftsmanship — under a single contract and undivided responsibility. Write!

PITTSBURGH · DES MOINES STEEL COMPANY

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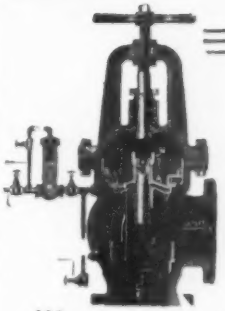
Des Moines, Ia. . . . . 913 Tuttle Street



TRIPLE ACTING NON-RETURN VALVE

★

This valve will automatically cut in a boiler whenever its pressure equals line-header pressure; it will isolate a boiler automatically whenever its pressure, from any cause, is lower than line-header pressure; and it will prevent steam flow from the boiler in event of sudden drop of line-header pressure below the boiler pressure, by means of differential shot pilot valve functioning.

★

Furnished in angle, globe and elbow patterns, sizes 2½" to 12"; also available in larger sizes, as well as in the Cross pattern.

Write for Specifications

GOLDEN-ANDERSON VALVE SPECIALTY CO.

Fulton Building Pittsburgh, Pa.

THE "LONG ARM OF THE LAW" IS LONGER THAN EVER

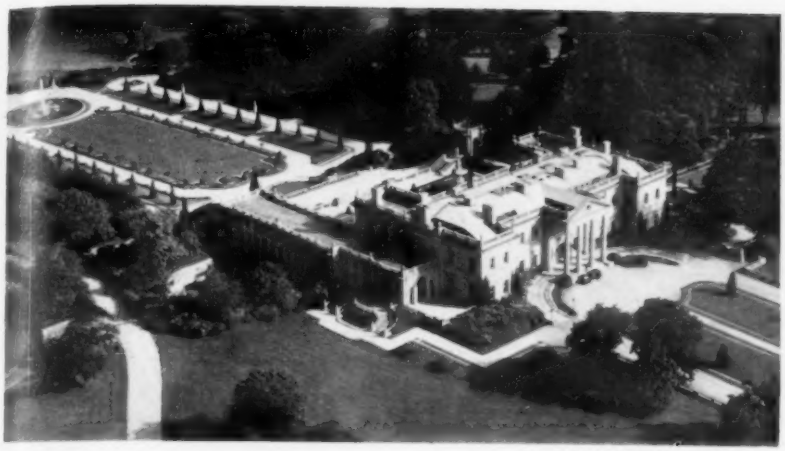
THE police car and police radio have immensely increased police mobility—increased the ability of a limited force to protect a large area—increased the executive efficiency of over-burdened police officials.

RCA Radio Systems are helping municipal, highway, county and state police—upholding, strengthening, and lengthening "the long arm of the law"!

At present, of course, production facilities are principally devoted to war effort. Please be assured, however, that every effort will be made to supply police departments with RCA police radio equipment and service just as soon as war conditions permit.

RCA EMERGENCY COMMUNICATIONS EQUIPMENT

RCA Victor Division • RADIO CORPORATION OF AMERICA • Camden, N. J.



(AERO SERVICE CORP., PHOTO)

The Whitemarsh Hall recently purchased by the Pennsylvania Salt Co. The company plans to use it for scientific institutional work, but will not disturb the outside appearance.

Famous Estate Now a Laboratory

Leonard T. Beale, President of the Pennsylvania Salt Manufacturing Co., 1,000 Widener Bldg., Philadelphia, Pa., recently announced the company's purchase of the famous Whitemarsh Hall just outside of Philadelphia which was formerly the residence of the later Edward T. Stotesbury.

The buildings will be used for purely scientific institutional purposes. There will be no manufacturing or commercial operation of any kind carried on there. It will be staffed by about 75 chemists and their assistants who will continue to carry on the intensive organized research work that has been part of the company since its development.

It is this research work, President Beale states, that has been responsible for the development of some of the company's present products including "Orthosil," sodium aluminate, aluminum fluoride and other fluorine compounds, new process of chlorination, and special insecticides. Electrochemicals have also been given considerable emphasis, and new products as well as improved manufacturing operations have resulted.

This purchase will allow the company an opportunity for carrying forward its present and future program looking toward the development of new and improved products for both war and postwar use.

Ruth Leach Vice-President of IBM

Miss Ruth Leach has been appointed Vice-President of the International Business Machines Corp., 590 Madison Ave., New York 22, N. Y., thereby becoming the first woman to hold a corporate office with IBM. She was formerly Manager of the Systems Service for the entire company.

Miss Leach was systems service woman in Atlanta and a member of the faculty of the IBM employees' school at Endicott, N. Y. As Secretary of Education of Women for the company she has selected, trained, and supervised hundreds of young women from all parts of the country, as well as foreign countries, and has visited practically every company office in the United States and Canada in the course of her work with the sales, service, and engineering personnel.

It has also been announced that Miss Mary Schultz has been appointed Assistant Vice-President. Miss Schultz was previously Assistant Manager of the Systems Service and worked closely with Miss Leach.

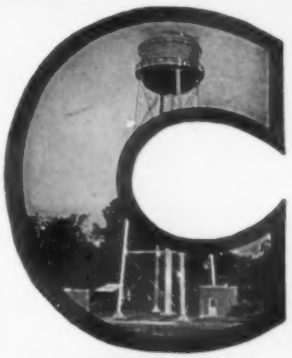
WATER AND SEWAGE TREATMENT EQUIPMENT

Accelators • Aerators
Accelo-Filters • Activators
Chemical Feeders
Coagulators • Clarifiers
Filter Plant Equipment
Hydraulic Controls
Lime Slakers
Recarbonators
Rotary Distributors
Sewage Samplers
Water Softeners

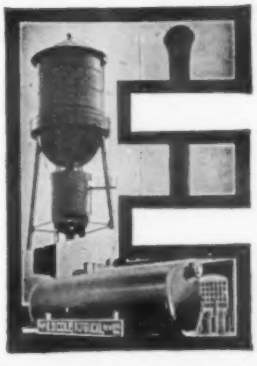
Write for Bulletins

INFILCO
INCORPORATED
Formerly INTERNATIONAL FILTER CO.
325 W. 25th PLACE • CHICAGO, ILL.

Tank Builders For Over 80 Years!

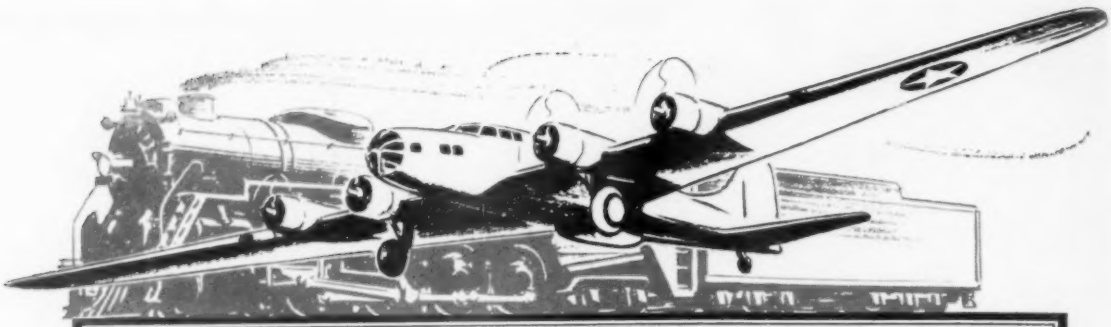


Tanks, Towers, Kettles, Kiers, Vats, Vessels, Bins, Boilers, Stacks, Standpipes and other fabricated platework from your specifications or ours.



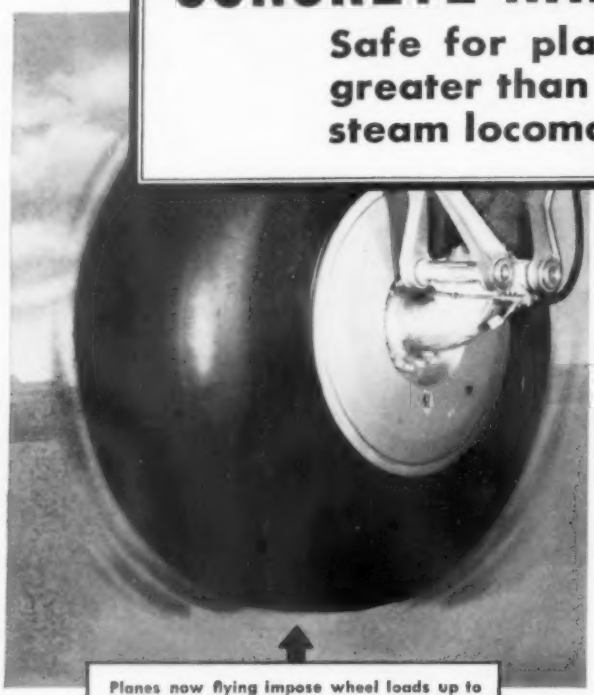
Write for "Tank Talk" — 6-A, or let us figure on your requirements.

R.D.COLE MFG.CO.
Established in 1854
NEWNAN · · · GEORGIA

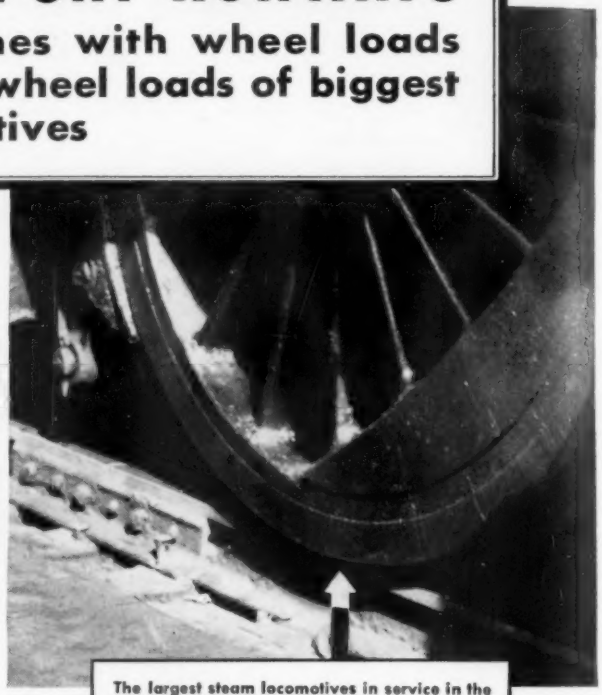


CONCRETE AIRPORT RUNWAYS

Safe for planes with wheel loads greater than wheel loads of biggest steam locomotives



Planes now flying impose wheel loads up to 80,000 lb. It is reported that even heavier planes are being designed. *(Douglas Aircraft Photo)*



The largest steam locomotives in service in the United States have wheel loads of not more than 37,500 lbs.

Heavy wheel loads test the stamina of airport runways or railway roadbeds. And the wheel load imposed by the large modern bombers and transports is even greater than the wheel load of the largest steam locomotives.

For heavy duty airport runways whose use is expected to extend into the postwar period, safety, economic and engineering facts point to concrete.

The first cost of adequately designed concrete runways for heavy duty wartime or peacetime service is usually less than that of any other pavement of equal load-carrying capacity.

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Buy more war bonds

Allis-Chalmers Type AO self-priming pump, with improved automatically controlled valve.

Allis-Chalmers Announces Self-Priming Pump

Distinctive in the new type AO self-priming pump manufactured by Allis-Chalmers, Milwaukee, Wis., is the automatically controlled arrangement which helps to insure its quick and effective priming action.

Here is the way it works. The water, passing through the pump runner and the volute passage, draws a certain amount of air behind it carrying it into the suction passage. This hydraulically lifts the column of water in the suction line and achieves the same results as the action of a separate vacuum pump. The priming valve closes slowly during this process, acting against a spring tension that governs the rate of priming and the static height of the priming suction lift. The automatic closing of the valve prevents water from by-passing to the suction chamber with resulting power loss.

At present the type AO pump is being produced only in 1½-, 2-, and 3-inch sizes—although Allis Chalmers officials state that a complete line ranging from 1 to 6 inches is contemplated, with capacities ranging from very small to 1,400 gpm.

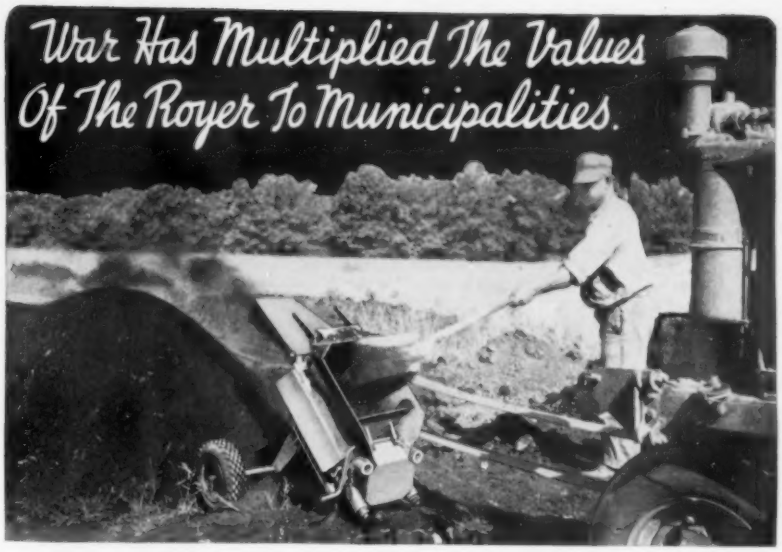
Third Star for Nordberg

The Nordberg Manufacturing Co., Milwaukee 7, Wis., has just been awarded a third star for its Navy "E" pennant. The pennant was originally awarded in May 1942.

This company also has been awarded an additional star for its Maritime work which was given the company in May of this year.

Morse Boulger Moves

The new office of the Morse Boulger Destructor Co. and Kernerator Co. is now located at 205 East 42nd St., New York 17, N. Y., according to a recent announcement.



Despite the manpower shortage, you are endeavoring to keep up your parks, boulevards and municipal golf courses as well as possible for the sake of civilian morale. You also want your city to provide its share of the fertilizer which is so urgently needed for increased food production through Victory Gardens. Too, you want to do right by the younger generation by maintaining the school grounds and athletic fields.

The Royer makes all these results possible with only a small, self-liquidating investment. Many of the more than 5,000 Royers now in service are owned by municipalities, which find them of greater value today than ever before.

This rugged, easily-operated, trouble-free machine is a tremendous labor saver in any of its several functions. The only labor required is shoveling the material into the hopper. The Royer does the rest, including discharging the desired product onto truck or stockpile.

At the parks, the Royer shreds, mixes, aerates and loads in a single operation all the materials used to make top dressing; discharging a compost which results in beautiful lawns at minimum cost. Operation is six to ten times faster than hand-mixing and, of course, much more thorough.

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Send for Bulletin 440—shows all 12 models.

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for THIS battle, G.H.Q.

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You're an officer in both of these drives. Your personal leadership is equally vital to both. But have you followed the progress of your Pay-Roll Savings Plan as closely as you have your production?

Do you know about the new Treasury Department quotas for the current Pay-Roll Allotment Drive? *Quotas running about 50% above the former figures?* You see, these new quotas are based on the fact that the armed forces need more money than ever to win the war, while the average worker has more money than ever before to spend. Particularly so, on a *family income* basis—since in so many families several members are working, now.

Remember, the bond charts of today are the sales curves of tomorrow! Not only will these War Bonds implement our victory—they'll guard against inflation, and they'll furnish billions of dollars of purchasing power to help American business re-establish itself in the markets of peace.

So get this new family income plan working at once. Your local War Finance Committee will give you all the details of the new plan. Act today!

This advertisement prepared under the auspices of the War Advertising Council and the U. S. Treasury Department.

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(Continued on next page)

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Index of Advertisers in This Issue

Aeroil Burner Co., Inc. 32
Allis-Chalmers Mfg. Co. 33
American-Marsh Pumps, Inc. 115
American Photocopy Equipment Co.. 22
American Tel. & Tel. Co. 6
Anthracite Equipment Corp. 34
Architects, Landscape 131, 132, 133
Armco Drainage Products Assn..... 112
Austin-Western Machy. Co., The.... 14
Autocar Company 69

Badger Meter Mfg. Co. 10
Barrell Co., William L. ....Third Cover
Biltmore Hotel 133
Black & Veatch 131
Buffalo Meter Co. 26
Burns & McDonnell Engineering Co.. 131
Burroughs Adding Machine Co..... 122

Calcium Chloride Assn..... 120
Cast Iron Pipe Research Assn..... 30
Caterpillar Tractor Co. 84
Chapman Valve Mfg. Co., The 102
Chicago Bridge and Iron Co. 8
Cleminshaw Co., The J. M..... 131
Cole-Layer Co., The 132
Cole Mfg. Co., R. D. 127
Connery Construction Co. 34
Consulting Engineers 131, 132, 133
Cuprinol, Inc. 114

Duro Test Corp. 98

Eddy Valve Co. 30
Electrical Testing Laboratories, Inc.. 131
Expanding Sewer Machine Co. 34

Fairbanks, Morse & Co. 118
Federal Electric Co. 34
Fisher Research Laboratory 70
Flexible Sewer-Rod Equip. Co..... 114
Flink Co., The 26
Food Machinery Corp. 31
Ford, Bacon & Davis, Inc. 131
Ford Meter Box Co. 121
Fraser-Brace Engineering Co. 131
"Friend" Mfg. Co. 32

Gamewell Co., The 98
Gannett, Eastman & Fleming, Inc.... 132
General Electric Co. 35
Gerdau Co., Otto 119
Giant Manufacturing Co. 32
Globe Phone Mfg. Corp. 115
Golden-Anderson Valve Specialty Co. 125
Graver Tank & Mfg. Co. 80
Gruendler Crusher & Pulv. Co..... 74

Haiss Mfg. Co., Inc., George..... 16
Harley-Davidson Motor Co. 90
Heil Co., The 32
Hersey Manufacturing Co..... 106
Hydraulic Development Corp. 111

Infilco, Inc. 127
International City Managers' Assn... 114

Jeffrey Mfg. Co. 121
Johnson Gear & Mfg. Co., Ltd..... 123
Johnston & Jennings Co., The, Rusta Restor Div. 34

Kelly Well Co. 117
Klauer Manufacturing Co. 12
Koehring Co. 26

Laboratories, Testing 131, 132, 133
Layne & Bowler, Inc. 27
Leadite Co., The 28
Littleford Bros., Inc. 110
Lock Joint Pipe Co. 100

Mack Mfg. Corp., Fire Engine Div... 29
Manistee Iron Works 28
Metcalf & Eddy 132
Michaels Art Bronze Co., Inc., Museum Case Division 92
Morris Machine Works 117
Mueller Company 88
Murdock Mfg. & Supply Co. 22

National Water Main Cleaning Co.. 28
Neptune Meter Co. 36
Nutting Company, H. C., The..... 132

Outdoor Lighting Section.....95, 97

Peerless Pump Division, Food Machy. Corp. 31
Pennsylvania Salt Mfg. Co. 108
Permutit Co., The 104
Pitometer Co., The 132
Pittsburgh-Des Moines Steel Co..... 125
Pittsburgh Equitable Meter Co. 4
Pittsburgh Testing Laboratory 132
Portland Cement Assn. 128
Proportioneers, Inc. 30

RCA Manufacturing Co., Inc. 126
Remington Rand, Inc., Systems Div.. 124
Robert & Co., Inc. 132
Royer Foundry & Machine Co..... 129
Rusta Restor Div., Johnston & Jennings Co., The 34

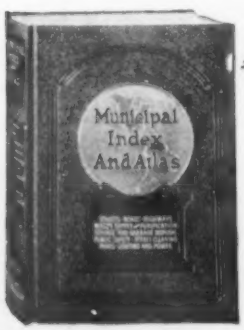
Sanitary Engineers 131, 132, 133
Servicised Products Corp.....21, 82
Smith Mfg. Co., The A. P. 18
Solvay Sales Corporation 23, 76
Stewart, W. H. 119
Streamline Pipe & Fittings Div., Mueller Brass Co. 19

Test Plug Mfg. Co. 28
Texas Company .....Second Cover
Timber Engineering Co. 116

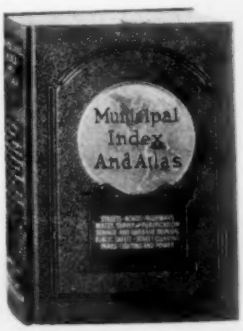
Union Metal Mfg. Co. 94
U. S. Pipe & Fdry. Co. 78
U. S. Testing Co., Inc. 133

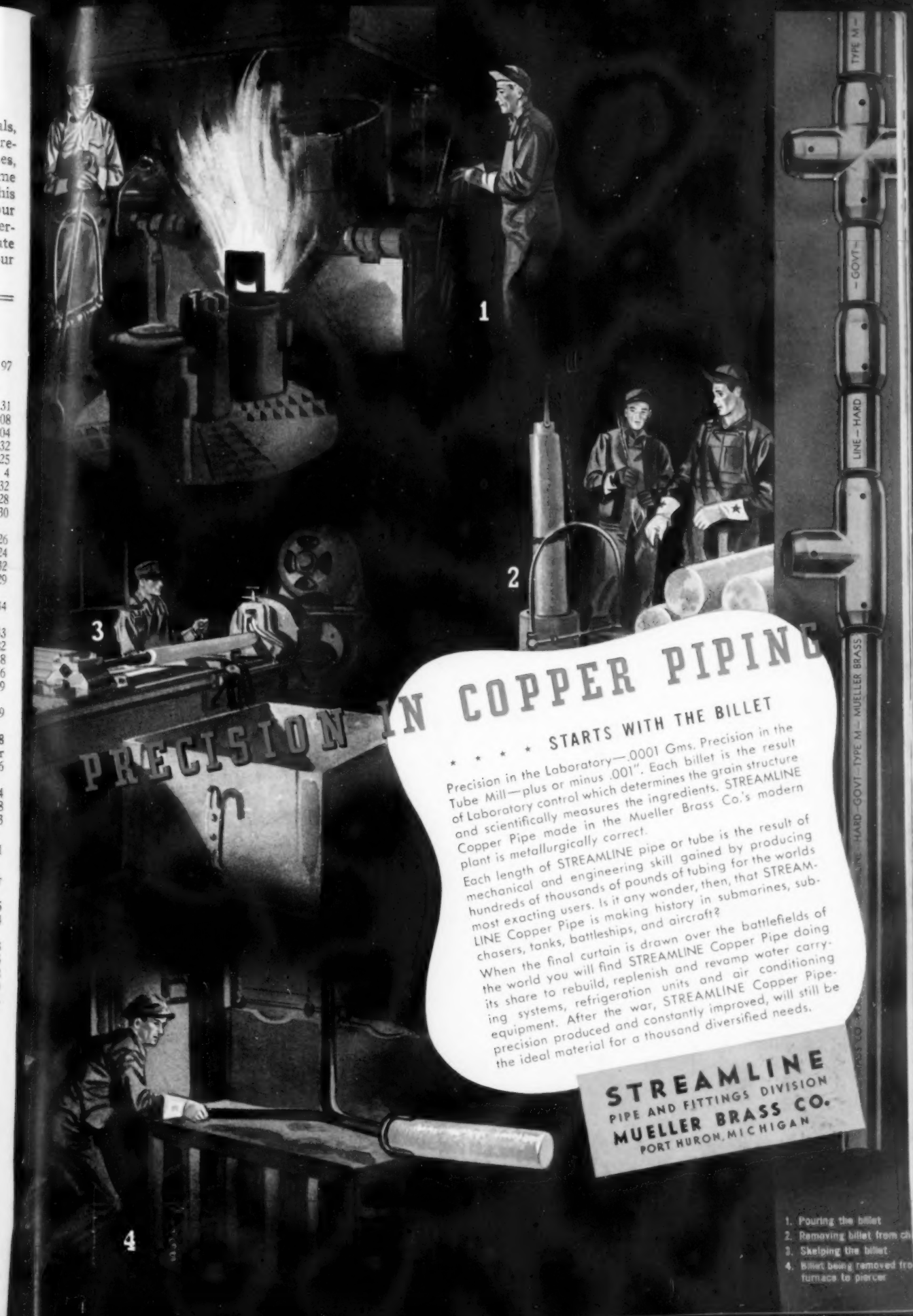
Valve & Primer Corp. 111

Wallace & Tiernan Co.....Back Cover
Ward LaFrance Truck Division, Great American Industries, Inc.... 25
Warren Foundry & Pipe Corp..... 24
Welsbach Engineering & Management Corp. 133
Westinghouse Electric & Mfg. Co... 96
White Mfg. Corp. 28
Wood Co., R. D. 20
Worthington-Gamon Meter Co..... 86



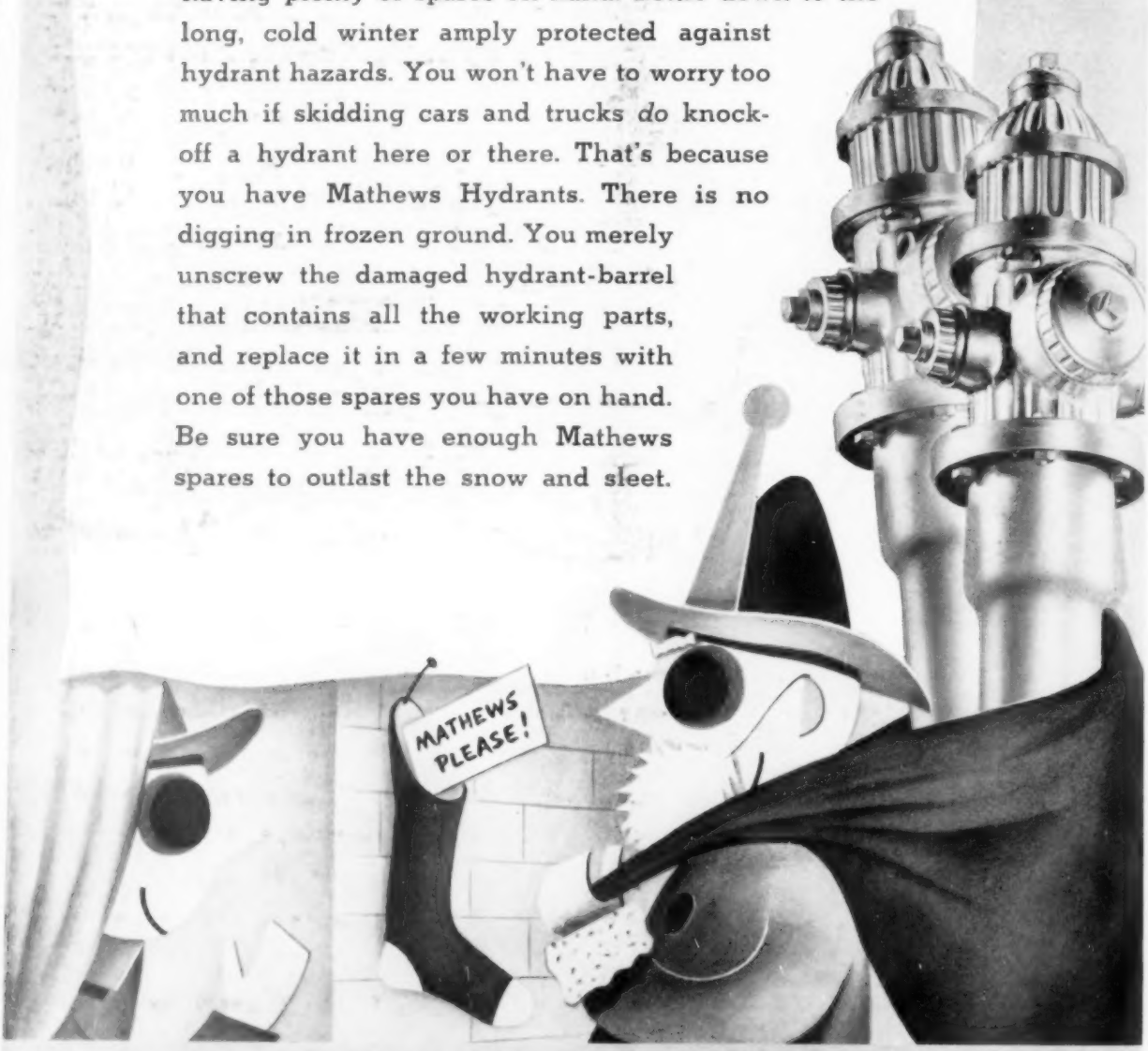
THE MUNICIPAL INDEX AND ATLAS has been published annually by THE AMERICAN CITY MAGAZINE Corporation since 1924. The 555 pages in the 1943 edition present statistical studies, municipal operation data, equipment listings and catalogs, used by mayors, city commissioners, public works and utility officials, and municipal department heads.




PRECISION IN COPPER PIPING
STARTS WITH THE BILLET
Precision in the Laboratory—.0001 Gms. Precision in the Tube Mill—plus or minus .001". Each billet is the result of Laboratory control which determines the grain structure and scientifically measures the ingredients. STREAMLINE Copper Pipe made in the Mueller Brass Co.'s modern plant is metallurgically correct.
Each length of STREAMLINE pipe or tube is the result of mechanical and engineering skill gained by producing hundreds of thousands of pounds of tubing for the worlds most exacting users. Is it any wonder, then, that STREAMLINE Copper Pipe is making history in submarines, subchasers, tanks, battleships, and aircraft?
When the final curtain is drawn over the battlefields of the world you will find STREAMLINE Copper Pipe doing its share to rebuild, replenish and revamp water carrying systems, refrigeration units and air conditioning equipment. After the war, STREAMLINE Copper Pipe-precision produced and constantly improved, will still be the ideal material for a thousand diversified needs.
STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN
1
2
3
4
TYPE M
GOVT
LINE—HARD
1. Pouring the billet
2. Removing billet from ch
3. Skelping the billet
4. Billet being removed fro furnace to piercer

WINTER TIME IS "STOCKING" TIME

Give yourself the peace-of-mind that comes with having plenty of spares on hand. Settle down to the long, cold winter amply protected against hydrant hazards. You won't have to worry too much if skidding cars and trucks *do* knock-off a hydrant here or there. That's because you have Mathews Hydrants. There is no digging in frozen ground. You merely unscrew the damaged hydrant-barrel that contains all the working parts, and replace it in a few minutes with one of those spares you have on hand. Be sure you have enough Mathews spares to outlast the snow and sleet.



MATHEWS HYDRANTS

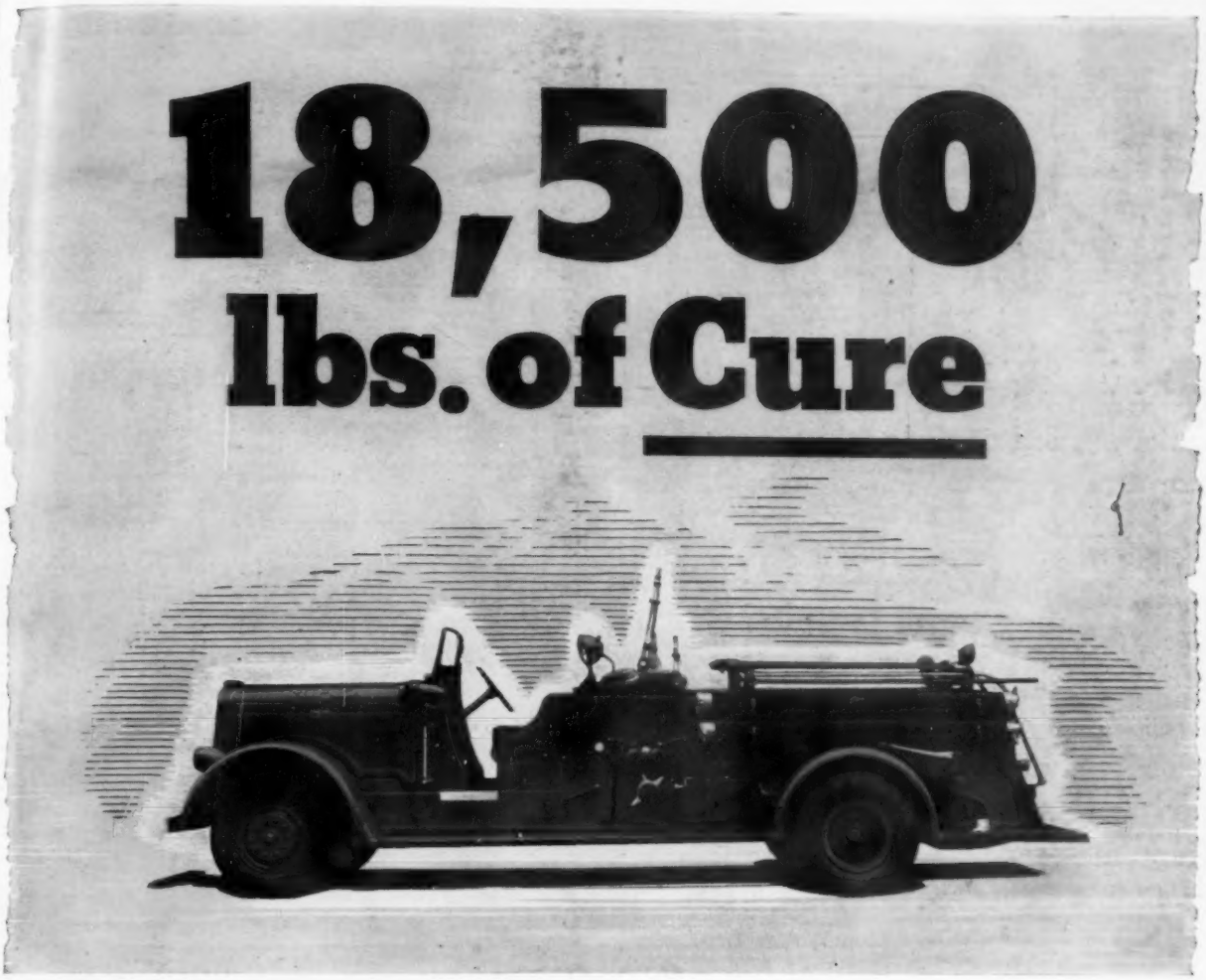
400 CHESTNUT STREET, PHILADELPHIA, PA.

ESTABLISHED IN 1803

Made by R. D. WOOD Company

MANUFACTURERS OF SAND SPUN PIPE (CENTRIFUGALLY CAST IN SAND MOLDS) AND R. D. WOOD GATE VALVES

18,500 lbs. of Cure



QUICK FACTS

(About Model 150-T illustrated)

- Length: 25 feet 3 inches.
- Weight (empty): 15,000 lbs.
- Wheelbase: 192 inches.
- Turning Radius: 35 feet.
- Horsepower: 235.
- Pump: 1000 g.p.m., 2-stage Centrifugal, Rotary, optional.
- Booster Tank: 150-350 gallons.
- Hose Capacity: 450 feet ¾ inch Hose; 300 feet 1 inch Hose.

WE AGREE that in the fire field an ounce of prevention is worth a pound of cure. Pictured above, however, is the most effective nine and one-quarter tons of cure available to fire fighters. It is a model 150-T Ward LaFrance triple combination pumper recently delivered to the City of Minneapolis.

There is a Ward LaFrance pumper to meet the exact needs of any community. Let Ward LaFrance engineers help you to attain maximum protection for your community.

WARD LAFRANCE TRUCK DIVISION

ELMIRA ★ NEW YORK

★ WARD LAFRANCE ★

© G.A.I., Inc., Meriden, Conn.

USE

WATER METERS *NOW* TO CONSERVE WATER!

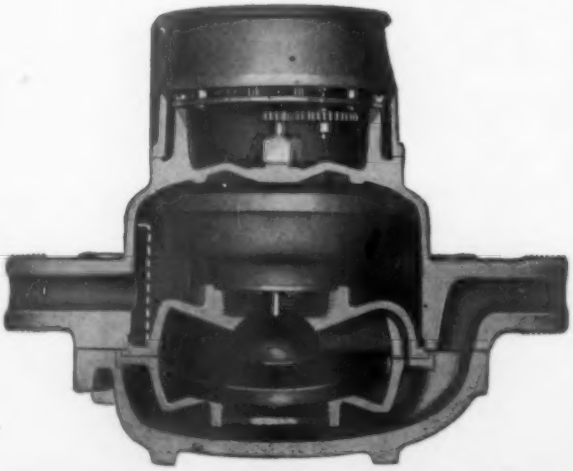
Plans for post-war metering of water services are excellent, provided the water system can wait that long. But war-time conservation means ***"Save Water Now!"***

The War Production Board request for waterworks conservation of water, coal, oil, chemicals can best be answered by pumping less. Meters are readily available to do their part in stopping waste to reduce pumpage. They make conservation financially profitable as well as patriotic.

You are invited to write for full information on Niagara Water Meters, with pre-war quality in all working parts.

BUFFALO METER COMPANY

2902 Main Street **Buffalo 14, N. Y.**



Flink - Faster - Lower Cost Ice Control & Seal-Coating

SAVED $7,000

A northern city writes, "We saved about $7,000 spreading sand alone our first season. Paid for the cost of Flink spreaders nearly 6 times over."

Another city writes, "Ice is no longer a problem. Now we get our intersections covered fast."

Let us show you these and other letters.

The truck driver operates the Flink one-man spreader. For this reason, and because it spreads faster, one truck with a Flink spreader does as much as 3 trucks with hand shovelers . . . an answer to the manpower shortage. The Flink spreader fits all standard dump bodies — does not limit use of truck. Spreads all granular materials up to 1" wet or dry, forward or backward, full width or half width of street. A Flink spreader will pay for itself in 60 days in labor saved — in extra spreading. Write for literature.

THE FLINK CO.
Streator, Illinois
For particulars write our nearest representative:
WICO SALES
2924 N. Western Ave.
Chicago 18, Ill.
G. W. CLEMENTS
3050 Freemont St., Columbus 4, O.
WISCONSIN OIL & EQUIP. CO.
34 Park Ave., Oshkosh, Wisc.

CUT MAINTENANCE COSTS 75%

Concrete slab maintenance costs can be reduced as much as 75% by the Koehring Mud-Jack Method. The Mud-Jack raises sunken concrete walks, curbs and gutters, driveways, streets, and airport runways eliminating reconstruction costs. Write for the new Mud-Jack Bulletin which is both illustrative and descriptive.

KOEHRING HEAVY DUTY

KOEHRING COMPANY
Milwaukee, Wisconsin

MUD-JACK METHOD

VICTORY . . . AND LIBERTY

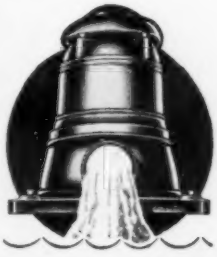
It's Time to Make Postwar Plans

Victory by our Armies means new liberty for Postwar activity. Manufacturers and municipalities then can, and will be expected to go ahead with plans of progress.

Those new plans will unquestionably include Wells and Pumps to supply an adequate amount of water—water that can be produced at exceptionally low cost. The Layne Organization has foreseen and made many plans for the days of Postwar. Highly improved designs —some of which were evolved to solve critical war needs, will be instantly available for factories and cities throughout the Nation.

Layne Well Water Systems have long enjoyed absolute superiority in highest efficiency. They have established and maintained thorough dependability. Their quality has been proven by nearly three quarters of a century of service. They are better built today than ever before.

For Postwar Water System planning, write for illustrated literature on Layne Pumps and Layne Well Water Systems. Address, Layne & Bowler, Inc. General Offices, Memphis 8, Tennessee.



LAYNE AFFILIATED COMPANIES

Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va., Savannah, Ga., Orlando, Fla. ★ Layne-Central Co., Memphis, Tenn. ★ Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City and Pittsburgh, Pa. ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio ★ Layne-Texas Co., Houston and Dallas, Texas ★ Layne-Western Co., Kansas City, Mo., Chicago, Ill., and Omaha, Neb. ★ Layne-Western Co., of Minnesota, Minneapolis, Minn. ★ International Water Supply, Ltd., London, Ontario, Canada.

LAYNE

WELL WATER SYSTEMS
DEEP WELL PUMPS

BUILDERS OF WELL WATER SYSTEMS FOR EVERY INDUSTRIAL AND MUNICIPAL NEED

TEXAS KNOWS HOW

1. to CONSERVE water supply;
2. to SAVE iron and steel for our gigantic war effort by avoiding unnecessary current purchases of water pipe.

Read this extract from the October
SOUTHWEST WATER WORKS JOURNAL:

AUSTIN GETS CLEAN MAINS

Workmen of the water department of Austin, Texas, are now about one-third through with the water main cleaning program now in progress in that city. About 70,000 feet have been cleaned in the last two months.

The work is being done by the National Water Main Cleaning Company of New York and Chicago. J. W. Fielder of Springfield, Missouri, is the Superintendent for the company on the job.

The program now being undertaken is the cleaning of approximately 210,000 feet of 6, 8 and 12 inch pipe, all of which was laid prior to 1921. Wonderful results are being obtained by the cleaning, and it is estimated that the fire flows will be increased by at least 50 percent in some areas of the city.

On July 29th the Water Department in cooperation with the Capitol Area Water and Sanitation Association put on a demonstration of the cleaning methods being used, and over 100 people from out of town witnessed the demonstration.

Albert R. Davis, Superintendent, and Marvin C. Turner, Distribution Engineer, invite all of the Superintendents in the Southwest to visit with them sometime within the next three months to observe the work being done.

Frank R. Rundell, Austin, Texas contractor, has completed the water works improvements at Elgin, Texas. The work consisted of the building of a new pump station, the drilling of a new well, the construction of a 400,000 gallon circular concrete reservoir, the remodeling of the old pump station, and the cleaning of 44,000 feet of 6 and 8 inch cast iron pipe, which work was done by the National Water Main Cleaning Co., New York. Julian Montgomery, Austin, Texas, was the Consulting Engineer for this FWA project.

NATIONAL has the EXPERIENCE
NATIONAL has the EQUIPMENT

The National Water Main Cleaning Co.
30 Church Street — New York 7

BRANCHES

115 Peterboro St., Boston 15, Mass. — 7103 Dale Ave., St. Louis 17, Mo.
910 William-Oliver Bldg., Atlanta 3, Ga. — 3707 Madison St., Kansas City 2, Mo.
205 W. Wacker Dr., Chicago 6, Ill. — 2028 Union Ave., Montreal, Can.
3812 Castellar St., Omaha 5, Neb. — 576 Wall St., Winnipeg, Can.

LEADITE

FOR JOINTING CAST-IRON WATER MAINS
Melted and Poured — *No Large Bell-holes to Dig*
Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 40 years ● Leadite joints improve with age

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.

No Caulking

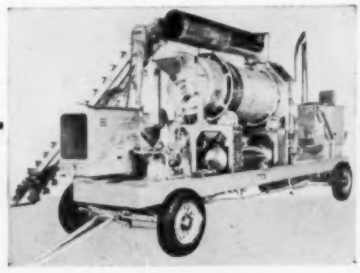
CENTRIFUGAL PUMPS
FIRE HYDRANTS
A.W.W.A. GATE VALVES

Manistee single-stage, double-suction pumps, 75-20,000 g.p.m. capacity

Manistee multi-stage pumps, 50-3500 g.p.m. capacity with heads up to 1600 feet

Write for Bulletins

MANISTEE IRON WORKS CO.
MANISTEE — MICHIGAN

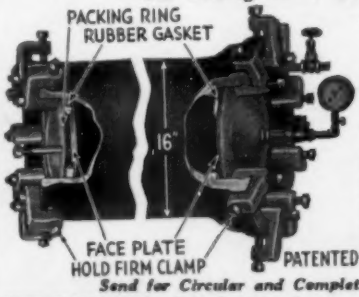


PORTABLE ASPHALT PLANTS

Write for Catalog

Elkhart — White Mfg. Co. — Indiana

"HOLD FIRM"
A NEW TEST PLUG
For Testing Mains Conveying

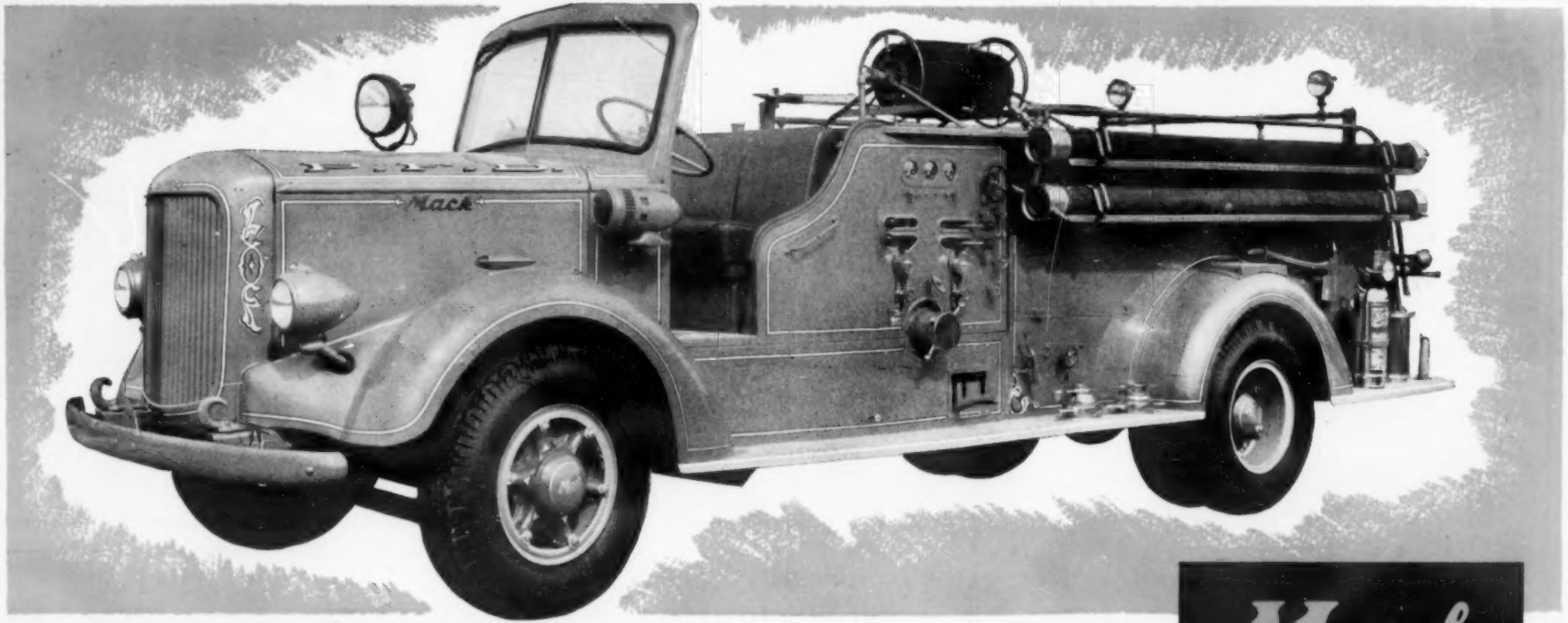


WATER — GAS
OIL — AIR

For testing cast iron, steel, transite, seal and concrete pipe lines, without the necessity of valves; test pipe as you lay them; eliminate open trench and hazards; special for testing reclaimed pipe, valves and fittings. Installed by any unskilled laborer; withstands 300 lbs. hydrostatic pressure, light in weight; same clamps fit many sizes of pipe. Made in all sizes. Used by the City of Chicago, contractors and municipalities.

Send for Circular and Complete Information

TEST PLUG MFG. CO. (not inc.) — SKOKIE, ILL.



ILLUSTRATED ABOVE, PORTLAND OREGON FIRE DEPT. 1000 GAL. PUMPER.

If you've got faith in the tools you use, you can keep your mind on what you've got to do. That's why a Mack is so respected round a firehouse. It'll keep pumping until the last spark's out —and America's users of Mack Fire Apparatus know it!

MACK MANUFACTURING CORPORATION, FIRE ENGINE DIVISION

Empire State Building, New York 1, N. Y.

IF YOU'VE GOT A MACK, YOU'RE LUCKY . . . IF YOU PLAN TO GET ONE, YOU'RE WISE!

Mack

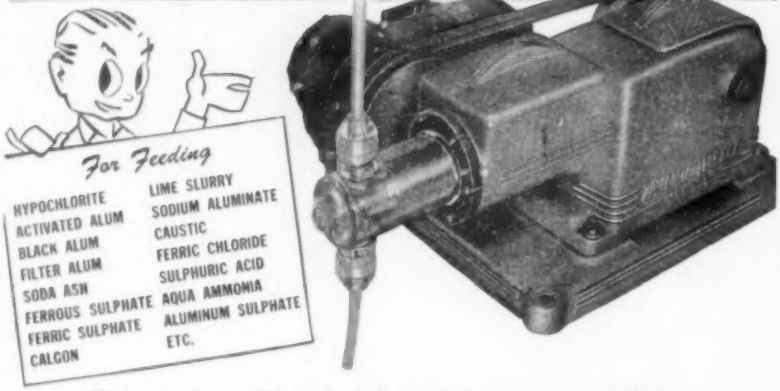
FIRE APPARATUS

If your community needs additional fire-fighting equipment or replacements, and if you can obtain permission from the War Production Board—*think of Mack.* Remember, Mack Fire Apparatus is backed by the greatest engineering resources in the industry.

BUY WAR BONDS

HIGH PRESSURE MIDGET

Chem-O-Feeder

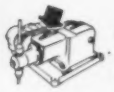


For Feeding

HYPOCHLORITE	LIME SLURRY
ACTIVATED ALUM	SODIUM ALUMINATE
BLACK ALUM	CAUSTIC
FILTER ALUM	FERRIC CHLORIDE
SODA ASH	SULPHURIC ACID
FERROUS SULPHATE	AQUA AMMONIA
FERRIC SULPHATE	ALUMINUM SULPHATE
CALGON	ETC.

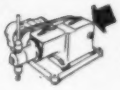
SEE-THRU REAGENT HEAD

Special plastic head and check valves combined with non corrodible stainless steel plunger make this "Proportioneers" pump ideal for water purification with chemicals listed above.



FLUID SEALED YOKE

Plunger and Packing are protected by special "Proportioneers" yoke preventing "build-up" on plunger and subsequent packing failure and air leakage.



ECCENTRIC CAM STROKE ADJUSTMENT

Dosage is precisely controlled by double eccentric cam under dust proof cover.

GEAR HEAD MOTOR

¼ H.P. 110V/220V 60 cycle 1 phase motor with double belt drive gives high efficiency where line pressures up to 200 lbs. per sq. in. are encountered.

With capacity up to 6½ g.p.h. against a maximum pressure of 200 lbs. per sq. in. this plunger type pump can be cross connected to starting switch of water pump for automatic chemical feeding. This set-up requires no attention other than periodic refilling of reagent container.

Send for complete information and specifications.

99 Codding St. **%PROPORTIONEERS, INC.%** Providence, R. I.

The EDDY Hydrant

Eddy Fire Hydrants have many points that appeal to water-works men. For example:

A damaged valve can be replaced in a few minutes at slight expense.

Should the standpipe be broken, not a drop of water need be lost.

All hydrants are frost-proof.

These and many other points of excellence are thoroughly explained in our catalog, which it will pay you to study.

Also manufacturers of the well-known Eddy Valves

EDDY VALVE COMPANY

WATERFORD **NEW YORK**

Representatives

Jas. B. Clow & Sons, Chicago, Ill.

National Cast Iron Pipe Co., Birmingham, Ala.

CAST IRON PIPE

The Standard Material for Underground Mains

CAST IRON PIPE RESEARCH ASSOCIATION

Thomas F. Wolfe, Research Engineer

1015 Peoples Gas Bldg. Chicago, Ill.

Elevated Storage Tank for Sale

Steel elevated storage reservoir in good condition. Erected by Chicago Bridge & Iron Company in 1916. 60,000-gallon-capacity. Hemispherical design. Stands 89' 9" from the ground.

The erectors report this structure can be re-erected, and with small amount of repairs and replacements will give good service for many years.

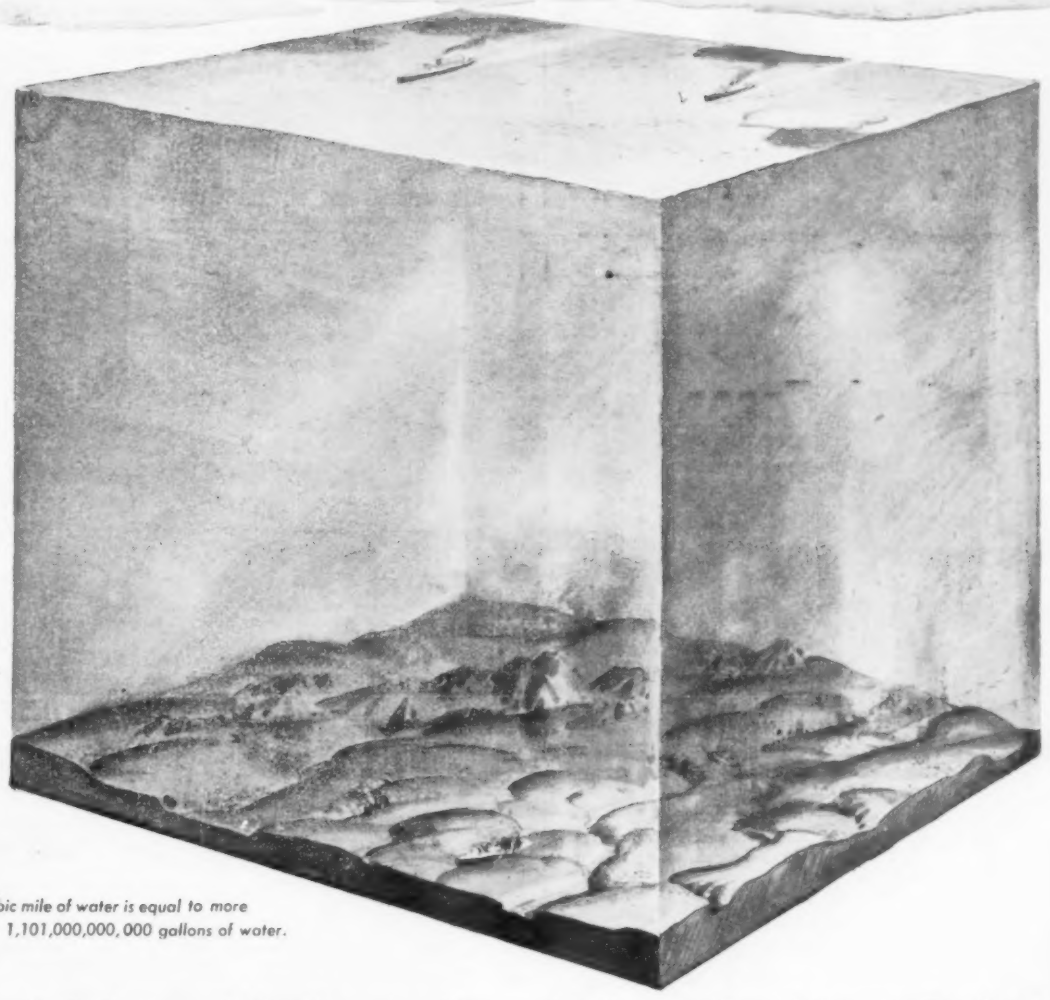
Ready for immediate dismantlement.

Priced at $1000 as it stands.

Write: W. J. Hoffman, Village Manager
Glenview, Illinois
Phone: Glenview 177

WANT A CUBIC MILE OF WATER?*

-See Peerless



*A cubic mile of water is equal to more than 1,101,000,000,000 gallons of water.

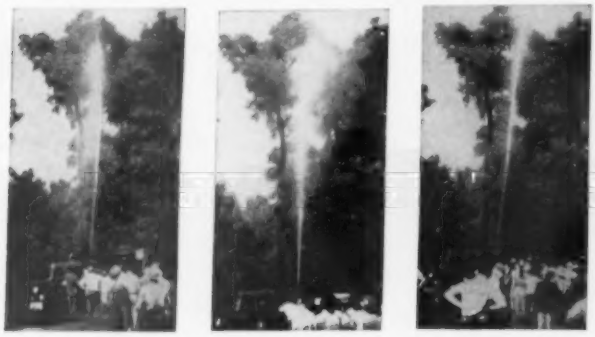
That's a fantastic amount of water—more than eleven hundred billion gallons–but ten giant Peerless Hydro-Foil Pumps could do this job. Maybe you only need 10 gallons a minute. There's a Peerless Hi-Lift Pump that will produce this amount, too. So, regardless of the capacity of water you need, Peerless has a pump for the job. Peerless Pumps are made in a variety of types, with oil or water lubrication and any power drive to pump water from any depth. Literature upon request.

PEERLESS PUMPS

TURBINE, HI-LIFT AND HYDRO-FOIL

PEERLESS PUMP DIVISION *of Food Machinery Corporation*

FACTORIES: CANTON, OHIO; LOS ANGELES, SAN JOSE, FRESNO, CALIF. Service Offices and Sales Agents in Principal Cities.



Too much tree for this one. | Almost able to get there. | "Friend" goes *over the top.*

Unretouched photos—exactly as the camera snapped them—of tree sprayers demonstrating at a meeting of shade tree men.

you get MORE POWER for High Trees

Why do shade tree men report: "When we need to reach high trees, the 'Friend' is the sprayer to use"?

Having the **simplest and sturdiest** pump, naturally the "Friend" operates easily under extreme loads.

You get Unequaled RELIABILITY

Having only ½ to ⅓ as many moving parts as other high-pressure spray pumps, the "Friend" has made an unrivaled record for freedom from interruptions, and low upkeep cost. "So simple that there doesn't seem to be anything to go wrong," say park officials.

"FRIEND" MFG. CO.
Gasport, N. Y.

"FRIEND" PARK SPRAYERS

SAVE WITH HEIL

M-1

street sanitation and garbage collection equipment

Let us help you plan now for bigger loads, faster operation, more efficient performance after the war. Write for complete details today.

Heil Conveyor Sanitation Unit | Heil Enclosed Garbage Dump Unit

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE, WIS.

GIANT

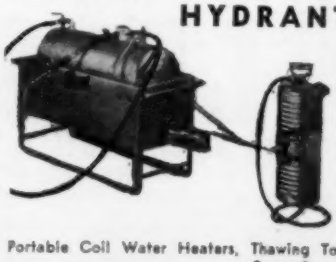
Reduce Pipe-Laying Costs with a GIANT Pipe Pusher

Write for booklet telling of this small inexpensive tool that pushes pipe (up to 15" diameter) through the ground at the rate of 1 to 5 feet per minute, thus avoiding the heavy expense of trenching.

Address Dept. P

GIANT MFG. CO.
Council Bluffs, Ia.

THAW CULVERTS AND HYDRANTS WITH AN AEROIL



NO. 98 PORTABLE STEAM THAWER

A handy steam plant with a detachable thawing torch. Used by leading Highway Departments for Culvert Thawing. Special Culvert Nozzle (10 ft.) available. Send for WINTER CATALOG No. 234A including Concrete Heaters, Portable Coil Water Heaters, Thawing Torches, Ground Thawers, etc.

For ASPHALT Airport and Road Construction and Maintenance, send for new AEROIL CATALOG NO. 240A—Asphalt Kettles, Cut-back and Emulsion Sprayers, Lead Furnaces, Asphalt Tools, etc.

Aeroil Burner Co., Inc. West New York, N. J.
CHICAGO SAN FRANCISCO DALLAS

READY FOR MORE SERVICE STRIPES

It's ready again! After thousands of hours of tough service, this Allis-Chalmers Model K tractor is ready for more service stripes . . . ready to take what comes for additional years. Completely renovated throughout, this unit, owned by the Municipal Light & Power Plant, Anderson, Indiana, returns with stepped-up efficiency to its work of feeding coal on a conveyor and handling the numerous utility jobs around the plant.

The overhaul involved the rebuilding of the transmission, installation of a new crankshaft, new final drive pinions, steering clutches, truck wheels and track rails . . . plus addition of a new motor kit. Yet the job took only two weeks. Fast service considering present conditions — shortage of critical materials and labor — but the MacAllister Tractor Company, Indianapolis, Indiana, who handled the job, like other Allis-Chalmers dealers, is equipped and prepared to render good service in these difficult times.

Why not add extra service stripes to your machines! Get more efficiency, longer life and lower cost operation. Entrust the job of equipment repairs to your Allis-Chalmers dealer and rest assured the work will be handled right and with all possible speed. At all times he has done his best to serve you . . . even under wartime conditions he is doing a *mighty fine job*. See him . . . today!

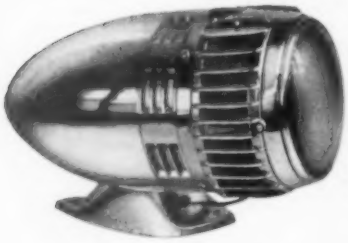
MEN WHO KNOW **"what's what"** about machines handle your repairs in Allis-Chalmers shops. This is part of MacAllister's skilled crew. Note the stripped Model K in the foreground — owned by Municipal Light & Power Plant, Anderson, Indiana. Here it is undergoing a rebuild of the transmission.

ARMY NAVY

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE, U. S. A.

ADD *Maximum* SAFETY with FEDERAL SIRENS



The FEDERAL FURY EXHAUST WHISTLE is available as a Warning signal in those communities which still prohibit the use of sirens under wartime conditions. Two new models of oscillating lights are also available for additional protection by a visual warning.

The unmistakable warning tone — up and down the scale — of FEDERAL Sirens assures maximum safety to pedestrians and vehicles, including your own.

FEDERAL Sirens are powerful—their tone, reaching far ahead, gives ample warning to avoid confusion that so often results in near-panic and accidents. In addition, FEDERAL Sirens can be furnished with flashing red light or oscillating red light—giving visible as well as audible warning.

These sirens, made in a variety of models, are designed and constructed for long, dependable service.

WRITE FOR BULLETIN TODAY!

FEDERAL ELECTRIC CO., Inc.
SIREN HEADQUARTERS
8744 So. State Street — Chicago 19, Illinois

Electrical Corrosion Control

Our proven cathodic method — approved by hundreds of enthusiastic users from coast to coast, provides permanent protection against rusting of water tanks, piping and steel structures.

Initial cost of a complete installation is about equal to the cost of a good paint job. Operation costs only about 2 mills (i.e. $0.002) per year per square foot of surface protected. Electrode type, or our new Electrode-less type, that keeps all parts of the system on the outside of the tank to avoid fouling from icing. Send for full details today!

RUSTA RESTOR
Division of
THE JOHNSTON & JENNINGS CO.
861 Addison Road — Cleveland 14, Ohio

ANTHRAFILT
A Filter Medium For All Purposes

ANTHRACITE EQUIPMENT CORP.
101 Park Ave. New York

H. G. Turner Research Engineer
STATE COLLEGE, PA.

CONNERY'S HEATING KETTLE
Style B-2

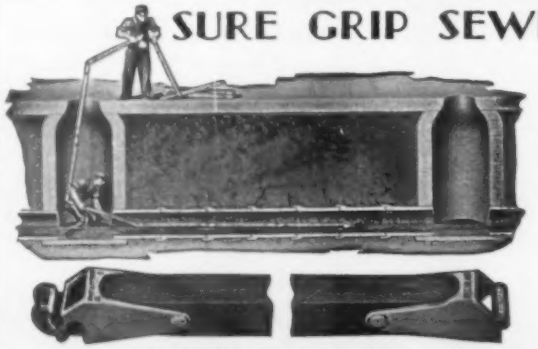
reduces street maintenance costs by heating tar and asphalt with SPEED AND SAFETY.

This oil burning kettle is equipped with steel roller-bearing wheels. Sizes: 30, 80, 110 and 165 gallons.

Write for catalog showing our full line of tar and asphalt heating kettles, spraying attachments, pouring pots, etc.

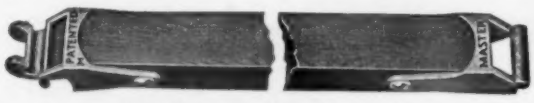
Connery Construction Co. 2nd & Luzerne Streets, Philadelphia, Pa.

SURE GRIP SEWER RODS and ACCESSORIES



The REGULAR, a light rod,
Fir stock 1¼ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod,
Fir stock 1½ x 1½ inch square.

Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

Picture of a man 5 minutes from jail

Time: 1:27 A. M. Place: Stratford, Conn. Watchman heard crash of glass. Saw man attempting to burglarize store across street. Phoned police station. Immediate orders went to three cruising cars equipped with General Electric two-way FM police radio. At 1:32 A. M.—*in exactly five minutes*—according to Stratford Police Chief William E. Nichols, burglar was booked at police station one mile from scene of crime!

YOUR COMMUNITY, TOO, CAN BENEFIT FROM GENERAL ELECTRIC POLICE RADIO

YOU fight crime the modern way when you use two-way FM police radio. And for FM *at its best*—it's General Electric, of course.

That's why police departments throughout the country are choosing G-E equipment . . . to give them remarkably efficient communications between mobile-unit and fixed-station transmitters and receivers.

And G-E two-way FM radios give police what they want – extended communication range . . . lower battery drain . . . improved tuning reliability . . . more easily serviced.

No matter what special requirements you may have, General Electric police radio equipment is engineered to meet them.

COMPLETE BULLETINS are now available to help you select the equipment and accessories best adapted to meet your special needs. If your local war industries require better police protection, you can secure the necessary equipment at once. *Electronics Department, General Electric, Bridgeport, Connecticut.*

• *Tune in* "THE WORLD TODAY" *and hear the news direct from the men who see it happen, every evening except Sunday at 6:45 E.W.T. over CBS. On Sunday listen to the G-E "All Girl Orchestra" at 10 P. M. E.W.T. over NBC.*

FOR FM AT ITS BEST—SELECT G-E

GENERAL ELECTRIC

163-812-6518

IT PAYS TO CHECK

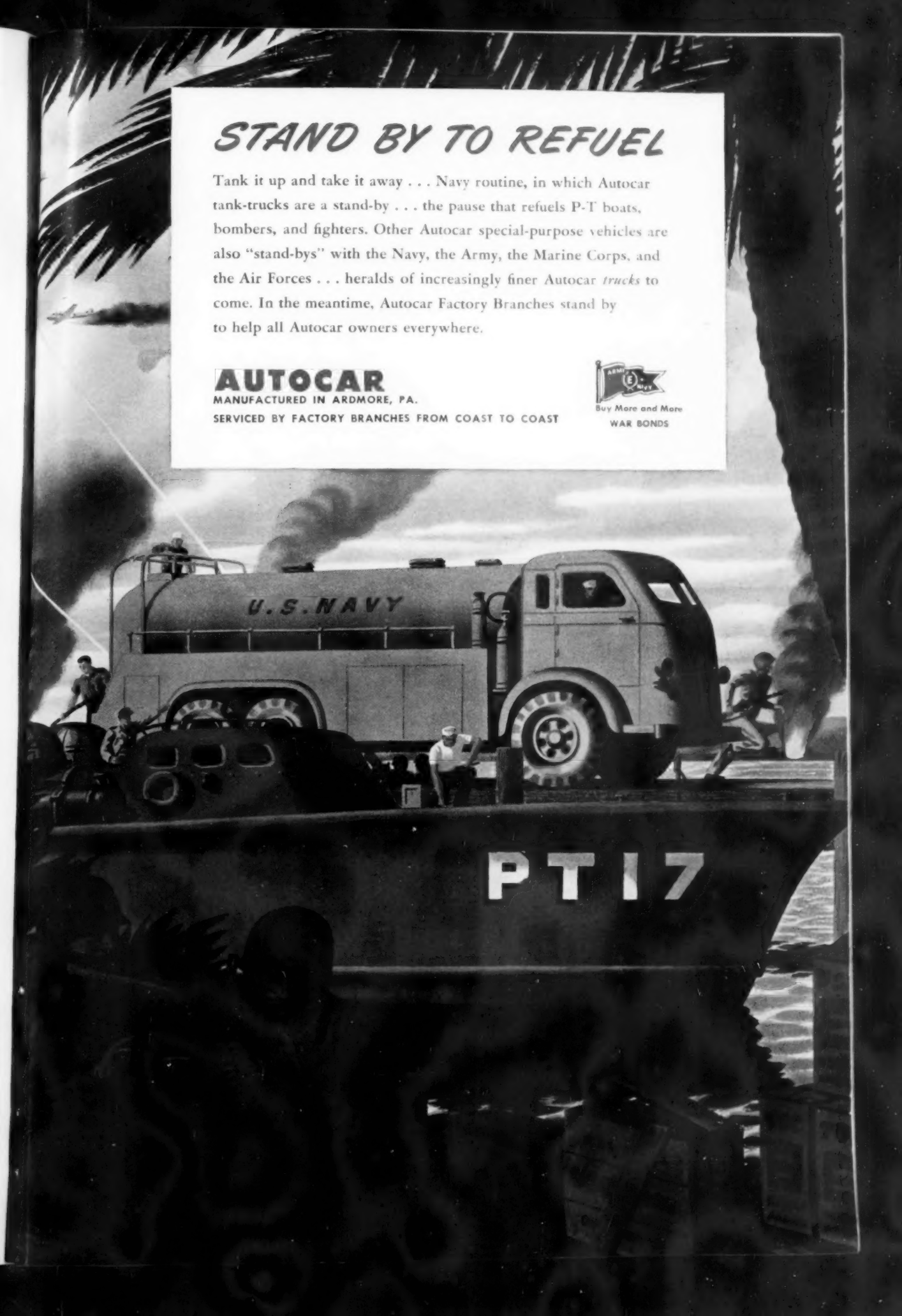
Your low flow test rate

ONE QUART (¼ gallon) per minute is the standard low flow test rate for ⅝" meters. An easy way to check it on your test bench is by running it into a quart bottle. If the bottle is filled in less than a minute, the rate is too high.

It will pay you to check this often, because it is at this flow that the sensitivity of the meter really shows up; and it has been proved that 13% of the water passed through a ⅝" meter is at about this rate of flow. If your meter does not test at least 90% at ¼ gallon per minute, you may be losing revenue that will more than pay for the cost of repairs. Many water departments have discovered this, and are now getting the benefits in dollars and cents.

82

NEPTUNE METER COMPANY • 50 West 50th Street • New York 20, N. Y.
Branch Offices in CHICAGO, SAN FRANCISCO, LOS ANGELES, PORTLAND, ORE., DENVER, DALLAS, KANSAS CITY, LOUISVILLE, ATLANTA, BOSTON.
Neptune Meters, Ltd., Long Branch, Ont., Canada



STAND BY TO REFUEL

Tank it up and take it away . . . Navy routine, in which Autocar tank-trucks are a stand-by . . . the pause that refuels P-T boats, bombers, and fighters. Other Autocar special-purpose vehicles are also "stand-bys" with the Navy, the Army, the Marine Corps, and the Air Forces . . . heralds of increasingly finer Autocar *trucks* to come. In the meantime, Autocar Factory Branches stand by to help all Autocar owners everywhere.

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MANUFACTURED IN ARDMORE, PA.

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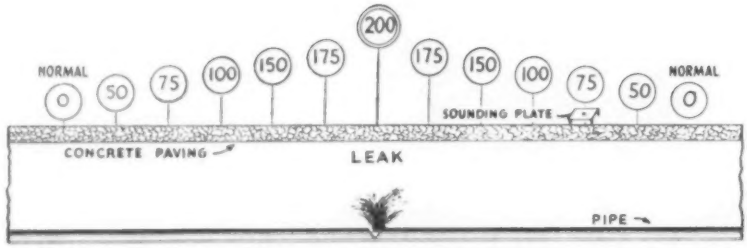
WAR BONDS

M-SCOPE Water Leak Detectors at ARMY POSTS



To determine the exact location of a leak, place the pickup unit on the ground or pavement directly over the pipeline, then move it step by step along the line. The microphone relays sound of escaping water to the receiving unit, which amplifies the sound more than 10,000 times for headphones. Point of greatest sound intensity is the point of leakage. The set has a visual dial indicator of extra sensitivity which also registers the sound intensity.

All during 1942 and 1943 M-SCOPE Water Leak Detectors have been helping to prevent water waste in Army posts in all parts of the United States.

An M-SCOPE Water Leak Detector is so ***sensitive*** that it can spot the exact trouble point even through concrete; so ***speedy,*** that it can test from 275 to 300 hydrants in a single day; so ***accurate,*** that it usually hits the trouble spot "right on the nose" and ***always*** within a circle two to three feet in diameter.

City Water Superintendents and Army Post Engineers alike, these days, realize the importance of conserving ***water, pipe, fuel.*** The M-SCOPE Water Leak Detector helps you conserve all three.

Write to **FISHER RESEARCH LABORATORY**

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FIRE

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Write to canvas dealer nearest you for names of manufacturers making the Flamefoil Finished canvas products you need.

Manufactured by PHILADELPHIA TEXTILE FINISHERS CO., Inc.

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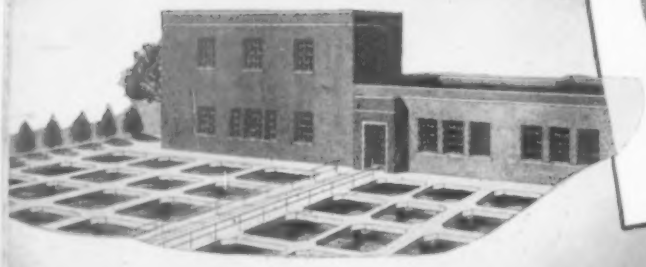
For now... it's SAFETY-FIRST!

Post-War... it's SAFETY-PLUS!



Meet this dual responsibility with W&T *Chlorination*

RIGHT NOW we are making every effort to keep in continuous service, as long as the war lasts, every chlorinator installation whatever its age. We are supplying necessary replacement parts and giving competent technical service – for SAFETY-FIRST.

AFTER THE WAR, new applications of Break-Point Chlorination and of Fully Automatic Control – new installations of automatic chlorinators, with chlorine flow recorders – and duplicate equipment for emergencies – will be available for the protection of your water supply – for SAFETY-PLUS.

"The Only Safe Water is a Sterilized Water"

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Keep your eye on these keys to post-war chlorination progress:

BREAK-POINT . . . for greater health protection, plus taste and odor control.

DUPLICATE UNITS . . . for 100% safety-insurance, plus peak load reserve.

FULLY AUTOMATIC CONTROL of application, to maintain a definite residual.

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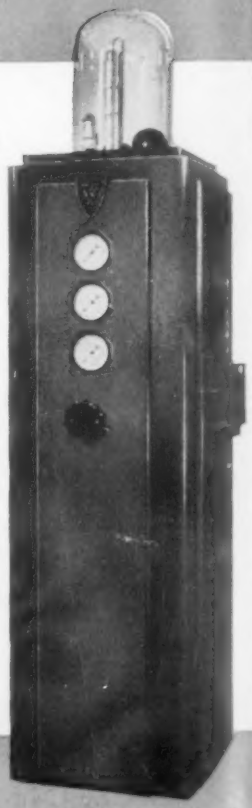

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